JOURNAL OF dbct

Editorial

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This journal is a vehicle of propagation of scientific bent of mind among the teachers and students for upholding the methods of Science in all kinds of scientific pursuits. This journal is a peer–reviewed publication that conforms to the guidelines presented by international standards, having its own ISSN

We look forward to an intellectually meaningful association in future with contributors and are extremely thankful to the persistence and hard work of our team of editors and faculty members.

Thalayolaparambu ***Chief Editor***
15.03.2019 ***Dr. Ambika A. Nair***

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A BRIEF STUDY OF SELECTED THALLOPHYTES OF VAGAMON VILLAGE.

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Abstract

Thallophytes are those miniature groups of plants which are of profound significance from medicinal, nutritional, industrial and ecological points of view. The present study was conducted in Vagamon which is supposed to be one of the busiest tourist destinations of Kerala State. Thallophytes which include Algae, Fungi and Lichens were present in appreciable amounts. Among Algae, Chlorophycean (*Oedogonium, Chara, Spirogyra*) and Cyanophycean (*Chlorogloea, Lyngbya* and *Oscillatoria*) members were abundantly present while Bacillariophycean members(*Pinnularia* and *Navicula*) were rarely found. Among Fungi, many medicinally important species were present like *Ganoderma lucidum, Lentinus* sps and *Dictyophora indusiatus*. Of these, *Ganoderma* has proved anti oxidative, anticancer properties while *Lentinus* sps is used against Cancer, AIDS, Hypertension and Bronchial allergies. *Dictyophora indusiatus* has proven antioxidative and antimicrobial properties. Of the fungal genera identified, three of them are highly edible- *Lentinus* sps, *Auricularia auricula* and *Dictyophora indusiatus* and has been used in cuisines due to the appreciable quantities of Proteins, Lipids, Fats, Minerals and Vitamins in them. Of the fungal genera identified, only one belonged to Ascomycotina (*Xylaria*) while all the rest belonged to Basidiomycotina (*Auricularia, Ganoderma lucidum, G.applanatum, Lentinus* sps, *Pycnoporous cinnabarinus*, *Mycena* sps, *Schizophyllum commune* and *Dictyophora indusiatus*) . The largest

numbers of species reported from among the thallophytes were the Lichen genera. The vast diversity of Lichens may be due to the presence of non pollution in those areas. All Lichens belonged to Ascomycota. Morphologically *Cryptothecia* sps and *Caloplaca granularis* were Crustose and all the rest were Foliose type (*Collema nigrescens*, *Hypotrachyna* sps, *Parmotrema perlatum*, *P.sancti angelii*, *Heterodermia speciosa, H.albicans, H.diademata* and *H.podocarpa*). The present study enables us to understand the significance and roles they played in human life as food items, medicines, industrially useful products and as ecological indicators.

Keywords : *Thallophytes, Algae, Fungi, Lichens, Crustose, Fruticose.*

1. Introduction

The Thallophytes are a group of plants that never form true roots, stems and leaves. Their undifferentiated plant body is called Thallus. They exhibit a great diversity in the organization of their plant body. Thallophytes include Algae, Fungi and Lichens.

The algae are the chlorophyll bearing plant groups. The algae live in a variety of environments like moist soil, rocks, snow, freshwater, marine water, as epiphytes, epizoic, epiphyllous and even some live as parasites. There are approximately 1800 genera with 21,000 species reported which are highly diverse with respect to their habitat, size and organization. The process of nutrition is autotrophic, in almost all groups of algae like that of green plants. Algae provide much of earth's oxygen, they are the food base for almost all aquatic life, they are a source of crude oil and they provide direct sources of food and many of them are employed in the production of several pharmaceutical and industrial products for humans like Diatomite, Alginic acid, Algin, Agar-Agar, Abrasives, Nutraceuticals, Antibiotics, Fodder, Space travel and the like. Thus they are useful in varied fields like Agriculture, Industry, Medicine and also used as food and fodder.

The other group of plants coming under Thallophytes are the Fungi. Fungi are a large group of simple, heterotrophic thallophytes, which lack chlorophyll. The vegetative fungal body is a simple thallus. It may be unicellular or multicellular, mycelial and undifferentiated into stems, roots and leaves. Mycelial thallus is an entangled mass of branched, tubular hyphae. Familiar examples of true fungi (Eumycetes) are the Yeasts, Molds, Morels, Toadstools, Earthstars, Stinkhorns, Mushrooms, Polypores, Puff balls, Rusts and Smuts. Fungi can grow in diverse habitats. They are heterotrophic in nutrition—they may be saprophytes, parasites or symbionts. Fungi can be used as edible food, medicinal and pharmaceutical industry and many fundamental findings in genetics have been made with the study of fungi such as *Neurospora, Saccharomyces* and *Aspergiillus*.

The next most important group under Thallophytes are the lichens. Lichens are structurally organized entity consisting of the permanent association of fungi and algae. The fungal component of lichen is called Mycobiont and algal component is called Phycobiont. Lichens have worldwide distribution and consist of 500 genera and 1800 species. They generally do not grow on new smoky industrial areas, hence they are indicators of pollution [1].They can tolerate extreme heat and can survive in snow for long years. Different types of lichens are there according to their thallus morphology. They can be Fruticose, Foliose, Crustose, Leprose, Squamulose and Gelatinous types based on their external morphology. Lichens are usually bright green to olive grey. The colouration is due to the pigmentation of algal partners [2]. Lichens are significant in that they have important nutritional, medicinal and Industrial uses for mankind. Many lichens form food of insects, insect larvae, reindeer and cattle. Evernia and Parmelia are edible lichens used by man. Some lichens are highly medicinal. Cetraria is useful in the treatment of respiratory diseases, Rocella in the treatment of angina, Usnea in the treatment of urinary complaints, Peltigera in the treatment of rabies and so on. Similarly lichens are used in brewing and distillation industries for production of alcohol, dye, litmus paper, cosmetics and perfumes and even in tanning.

The present study is to understand the different groups of Thallophytes prevalent in Vagamon area of Kerala and to understand the different morphological peculiarities, adaptive features, and uniqueness of this miniature group of plant life forms. The present study also dealt with the seasonal fluctuations and the significance of different seasons affecting their abundance and diversity.

2. Materials And Methods

The study of morphology and ecological aspects of different algae, fungi and lichens in Vagamon locality was done.

Fresh water algae were found in water streams, small puddles, and under surface of washing areas and water carrying pipes. They were first taken into collection bottles. Materials were bought into the laboratory and their morphological study was carried out. The collected materials were fixed in 4% formalin. In case of Algal specimens, separate Algal filaments by using needle and water drops were taken by a dropper in the slide and after staining, the slide is mounted and observed under the compound microscope. For unicellular algae, water drops were taken by a dropper, mounted and observed under compound microscope. The peculiar features were noted down. Identification of the material was done in consultation with reference books and photographs were taken using microphotograph or camera. The fungal and lichen specimens were collected from tree branches, barks, logs of decaying wood, in decaying litter and from soil. The fungal and lichen specimens were placed in collection bottles and fixed using 4% Formalin. Identification of the material was done in consultation with reference books and photographs were taken by using camera. Fresh mushroom specimens were taken and the gilled portion kept on a plain black paper and kept undisturbed for a few hours. In the next day spore pattern and colour of the spore print could be identified and photographs were taken.

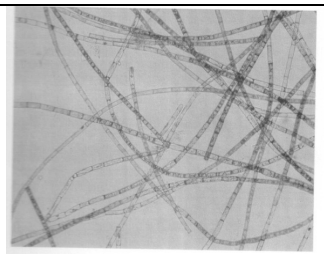
The algae were arranged as per the classification of F.E. Fritsch [3]. The fungi were classified as per G.C. Ainsworth‘s system of classification in 1973 [4]. The Lichen Genera were arranged as per their external morphology.

3. Results

The different Algal, Fungal and Lichen Genera collected from the study area were given below:

3.1 Algal Genera

3.1.1 *Oedogonium*

	**Scientific Classification** Division : Chlorophyta Class : Chlorpophyceae Order : Oedogoniales Genus : *Oedogonium*
Figure 1 : *Oedogonium*	

Oedogonium is exclusively fresh water in habitat. *Oedogonium* species are unbranched filamentous green algae which is often quite long. Cells frequently are wider at one end than the other. Certain cells of the filaments except the apical and basal cell show a number of parallel transverse markings--the cap cells, at their upper ends. Cap cells are the characteristic feature of *Oedogonium*.

3.1.2 *Chara*

	Scientific Classification Division : Charophyta Class : Charophyceae Order : Charales Family : Characeae Genus : *Chara*
Figure 2: *Chara*	

Chara is a submerged freshwater form and they grow attached to the muddy or sandy bottom below the water level. *Chara* species are multicellular, macroscopic, filamentous and branched. The erect axis may be 20-30 cm high. The plants are very

rough to touch due to the deposition of calcium carbonate all over. *Chara* usually have unforked branches and a distinctive, unpleasant garlic odour when crushed.

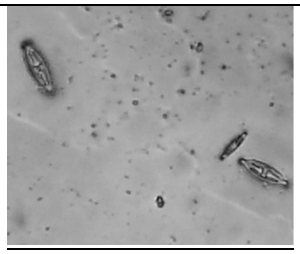
3.1.3 *Spirogyra*

Scientific Classification
Division : Chlorophyta
Class : Chlorophyceae
Order : Conjugales
Genus : *Spirogyra*

Figure 3: *Spirogyra*

Spirogyra is a genus named for the helical or spiral arrangement of the chloroplasts that is diagnostic of the genus. The filament is simple, unbranched and uniseriate composed of a single row of cylindrical cells. A single large nucleus is suspended in the center of the cell with the help of cytoplasmic strands. The chloroplasts are characteristic and possess either as smooth or a serrate margin and are arranged a characteristics parietal spiral band. Many small rounded pyrenoids are present in each chloroplast.

3.1.4 *Navicula*

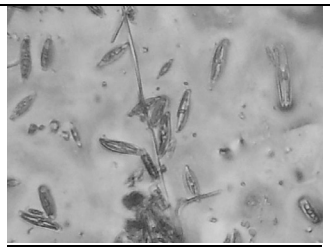


Scientific Classification
Class : Bacillariophyceae
Order : Naviculales
Family : Naviculaceae
Genus : *Navicula*

Figure 4: *Navicula*

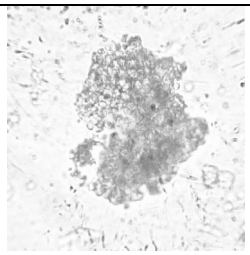
Navicula is a genus of boat-shaped algae-primarily aquatic, eukaryotic, photosynthetic organisms, ranging in size from a single cell. *Navicula* is a diatom. Valves of *Navicula* tends to be elliptical to broadly lanceolate in outline. The central sternum is thickened and that thickening may be somewhat asymmetric. The raphe is straight and filiform or lateral in some species.

3.1.5 *Pinnularia*

	**Scientific Classification** Division : Bacillariophyta Class : Bacillariophyceae Order : Pinnales Family : Pinnulariaceae Genus : *Pinnularia*
Figure 5: *Pinnularia*	

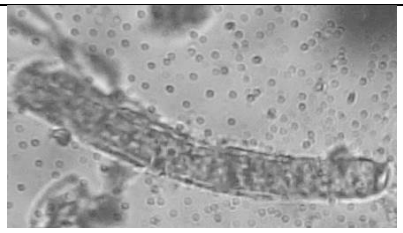
Pinnularia is a predominantly fresh-water alga, usually found in ponds and moist soil. *Pinnularia* is unicellular. The siliceous cell wall or frustules consists of two halves or valves one fitting in to the other like a box and it is overlapping lid. The outer valve is called epitheca and the inner hypotheca. Along the centre of the valve is seen a long line, the raphae. The pyrenoids may be present in each chloroplast.

3.1.6 *Chlorogloea*

	Scientific Classification Division: Cyanophyta Class: Cyanophyceae Order: Chroococcales Family: Chroococcaceae Genus: *Chlorogloea*
Figure 6: *Chlorogloea*	

Colonies mucilaginous, multicellular, more or less spherical, hemispherical, flattened attached to substrates (plants, stones), or free living, sometimes forming a large gelatinous mass. Cells irregularly arranged, spherical or oval.

3.1.7 *Lyngbya*

	**Scientific Classification** Division: Cyanophyta Class: Cyanophyceae Order: Nostocales Family: Oscillatoriaceae Genus: *Lyngbya*
Figure 7: *Lyngbya*	

Lyngbya is a genus of Cyanobacteria and forms long unbranching filaments inside a rigid mucilaginous sheath. Filaments free or entangled, forming expanded thallus, with thin or very thick sheath, trichomes single, filaments straight, sometimes spirally coiled with a large number of Hormogones.

3.1.8 *Oscillatoria*

	Scientific Classification Division: Cyanophyta Class: Cyanophyceae Order: Nostocales Family: Oscillatoriaceae Genus: *Oscillatoria*
Figure 8: *Oscillatoria*	

Oscillatoria is a genus of filamentous Cyanobacterium which is named for the oscillation in its movement. Filaments in the colonies can slide back and forth against each other until the whole mass is reoriented to the light source. Filaments of Oscillatoria are entangled in masses which float on water. Each filament is slender, unbranched and cylindrical, consisting of a row of short cells.

3.2 Fungal Genera

3.2.1 *Xylaria polymorpha*

Scientific Classification
Kingdom:Fungi
Division:Ascomycota
Class:Sordariomycetes
Order:Xylariales
Family:Xylariaceae
Genus:*Xylaria*

Figure 9: *Xylaria*

Xylaria is a genus of Ascomycetous fungi commonly found growing on dead wood. The genus *Xylaria* consist of funky club like decomposer of wood or plant debris that become black and hard by maturity, reminiscent of coal or charcoal. *Xylaria polymorpha,* commonly called Deadman's Finger, when young, it is pale bluish or purplish dust of conidia with a whitish tip but eventually black overall and by summer, the mushroom begins to blacken and by late summer it is entirely black and dried out. Fruiting body 3-10 cm tall up to 2.5 cm wide, shaped more or less like a club or a finger, but occasionally flattened. They are Saprobic (on decaying hard wood stumps and logs) in nutrition.

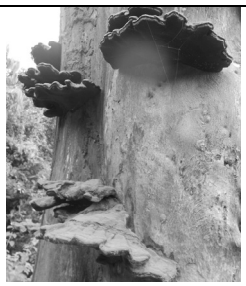
3.2.2 *Auricularia auricula*

Scientific Classification
Kingdom:Fungi
Divivion:Basidiomycota
Class:Agaricomycetes
Order:Auriculariales
Family:Auriculariaceae
Genus:*Auricularia*

Figure 10: *Auricularia*

Auricularia is a genus of jelly fungi in the family Auriculariaceae. Fruiting body either resupinate or pileate, wavy and irregular, typically ear shaped, 2-15 cm gathered together and attached at a central or lateral position, fertile surface gelatinous, tan to brown sterile surface (usually the upper one) silky to downy, veined, irregular, brown flesh, thin gelatinous rubbery in nature .They are Saprobic on decaying wood and logs in nutrition and the Spore print is white.

3.2.3 *Ganoderma*



Scientific Classification
Kingdom:Fungi
Phylum:Basidiomycota
Class:Agaricomycetes
Order:Polyporales
Family:Ganodermataceae
Genus:*Ganoderma*

Figure 11: *G.lucidum & G. applanatum*

G.lucidum is an annual polyporus, shelf fungus which generally causes uniform or mottled white rot of dead and living hardwoods and conifers. Fruiting body annual to perennial, sessile, attached with a broad lateral base, sometimes variously lobed to appear like a flower, corky in consistency, woody when dry. Pileus surface is pastel yellow towards margin. Pore surface pale grey or cream, pores almost visible to the naked eye. The spore print of *G.lucidum* is brown.

Ganoderma applanatum (Artist's bracket) is a bracket fungus with a cosmopolitan distribution. The fruiting bodies are up to 30-40 centimeters across, hard woody textured, and inedible, they are white at first but soon turn dark red brown. They are Saprobic on decaying logs and stumps or from the wounds of injured living trees producing white to straw coloured rot of sapwood and heartwood.

3.2.4 *Lentinus* sps

Scientific Classification
Kingdom : Fungi
Division : Basidiomycota
Class : Agaricomycetes
Order : Polyporales
Family : Polyporaceae
Genus : *Lentinus*

Figure 12: *Lentinus*

Most of the *Lentinus* species are edible and used by the people because of the significant amounts of proteins, lipids, fats, minerals and vitamins in them from dietary point of view.

Fruiting body of this fungus is small to large, pileus initially convex with a depressed centre, soon become infundibuliform, becoming dull white and turns pale yellowish white with age. Stipe is usually tapering towards the base.

3.2.5 *Pycnoporus cinnabarinus*

Scientific Classification
Kingdom : Fungi
Division : Basidiomycota
Class : Agaricomycetes
Orde : Polyporales
Family : Polyporaceae
Genus : *Pycnoporus*

Figure 13: *Pycnoporus cinnabarinus*

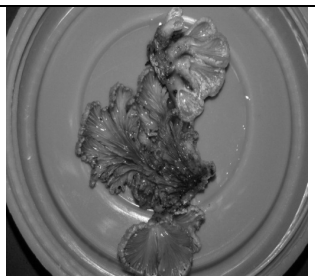
Pycnoporus cinnabarinus is a pretty unmistakable mushroom when fresh, since bright orange colors are fairly rare among the polyporus. Body is semicircular to kidney-shaped planoconvex, 2-13 cm across, up to 2 cm thick, bright reddish orange to dull orangish with age. They are saprobic on the dead wood of hardwoods and rarely on the wood of conifers, causing a white rot.

3.2.6 *Mycena* sps.

	Scientific Classification Kingdom : Fungi Division : Basidiomycota Class ; Basidiomycetes Order : Agaricales Family : Mycenaceae Genus : *Mycena*
Figure 14: *Mycena* sps	

Mycena is an inedible fungus generally has a brown conical cap. Some species are edible, while others contain toxins, but the edibility of most is not known, as they are too small to be useful in cooking. Most are grey or brown and have a transluscent and striate cap, which rarely has an incurved margin.

3.2.7 Schizophyllum commune

	**Scientific Classification** Kingdom: Fungi Division: Basidiomycota Class: Basidiomycetes Order: Agaricales Family: Schizophyllaceae Genus: Schizophyllum Species: *S.commune*
Figure 15: *Schizophyllum commune*	

Schizophyllum commune is a common species of fungus in the genus Schizophyllum. Fruiting body 1-5 cm wide, fan shaped when attached to the side of the log, irregular to shell shaped when attached above or below, upper surface covered with small hairs, dry white to greyish or tan, under surface composed of gill like folds that are split down the middle. Instead of gills, they are merely folds in the under surface and they are very distinctively “split’ or “doubled. They are saprobic on dead wood or occasionally parasitic on living wood. The Spore print is white.

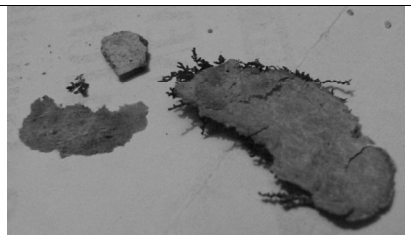
3.2.8 *Dictyophora indusiatus*

	Scientific Classification Kingdom : Fungi Division : Basidiomycota Class : Agaricomycetes Order : Phallales Family : Phallaceae Genus : *Dictyophora*
Figure 16: *Dictyophora indusiatus*	

Dictyophora indusiatus , commonly called the bamboo fungus, long net stinkhorn or veiled lady is a fungus belonging to the family Phallaceae. It usually grows in rich soil and well rotten woody material. The fruiting body of the fungus is characterized by a conical to bell shaped cap on a stalk and a delicate lacy skirt or indusium that hangs from beneath the cap and reaches nearly to the ground. Mature fruiting bodies are 25 cm tall with a conical to bell shaped cap. The cap is covered with a greenish brown spore containing slime which attracts flies and other insects that eat the spores and disperse them.

3.3 Lichen Genera

3.3.1 *Cryptothecia* sps

	**Scientific Classification** Kingdom : Fungi Division : Ascomycota Class : Arthoniomycetes Order : Arthoniales Family : Arthoniaceae Genus : *Cryptothecia*
Figure 17: *Cryptothecia* sps	

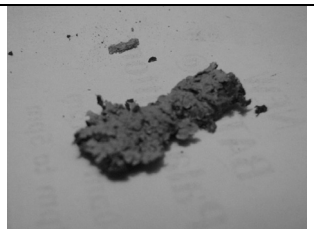
Cryptothecia sps is a genus of lichenized fungi is the family Arthoniaceae. The body of the lichen forms continuous circular crust like patches on dead wood, readily recognized by the prominent red pigment. *Cryptothecia* lichen is a crustose lichen because it grows in the form of a surface crust.

3.3.2 *Collema nigrescens*

	Kingdom : Fungi Division : Ascomycota Class : Lecanoromycetes Order : Lecanorales Family : Collemataceae Genus : *Collema*
Figure 18: *Collema nigrescens*	

It is jelly lichen found growing on the bark of trees. It is commonly called 'button jelly 'lichen or bat's wing lichen. It is blackish green when wet, and dark brownish green to dark olive when dry. The photosynthetic partner is usually cyanobacteria that are spread throughout the thallus. Although foliose in form, like all jelly lichens, the thallus is not differentiated. It has dark purple brown apothecia all over the body.

3.3.3 *Hypotrachyna* sps

	Kingdom : Fungi Division : Ascomycota Class : Lecanoromycetes Order : Lecanorales Family : Parmeliaceae Genus : *Hypotrachyna*
Figure 19: *Hypotrachyna* sps	

Hypotrachyna is a genus of lichenized fungi within the family Parmeliaceae. *Hypotrachyna* is a seggregate of the collective genus *Parmelia* characterized by narrow apically truncate lobes, a black lower surface and dichotomously branched rhizines.

3.3.4 *Parmotrema*

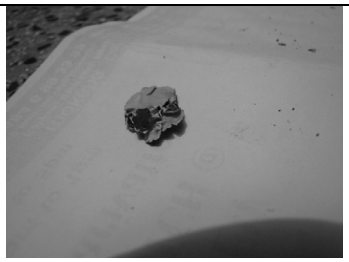
		Class : Lecanoromycetes Order : Lecanorales Kingdom : Fungi Division : Ascomycota Family : Parmeliaceae Genus : *Parmotrema*

Figure 20: *P.perlatum* & *P.sancti angelii*

This is leafy or foliose lichen with a grey- green thallus that is loosely attached to branches or rocks. Upper surface is whitish to pale greyish smooth. Lower surface black and shiny bearing numerous simple rhizines. The surface of the thallus is smooth with black cilia. Apothecia are very rare.

3.3.5 *Heterodermia:*

It is a cosmopolitan genus of more than 100 species and they grow on rocks, trees, shrubs, decorticated wood and very rarely on soil.

a. *Heterodermia speciosa*

Thallus usually foliar, occasionally subfructicose, continuous and lobate, irregular or forming rosettes, 2-10 cm wide, occasionally combines to form extensive mats. Upper surface is whitish grey to yellowish grey, plane to convex or concave towards the periphery. Photobiont forming a continuous layer. Rhizines white to black, simple to densely branched.

b. *H .albicans*

Thallus foliar, irregularly spreading, comparatively small to 4 cm wide, lobes 3 mm long, usually richly and dichotomously branched. They are usually eciliate. Upper surface is whitish grey, darker at the apices and lower surface whitish to pale brown, rarely dark grey. The most characteristic feature is the presence of lobes with a corticated lower surface. These species occur on barks and more rarely on rocks.

c. H. diademata

Thallus is foliar, orbicular to irregularly spreading, adnate to loosely adnate. Lobes 0-5 cm to 2-5 mm wide, plane to weakly convex, dichotomously to irregularly branched. Upper surface is greenish white, whitish to grey, rarely with marginal lobules. Lower surface is whitish to pale brown to dirty brown towards the centre. Rhizines are sparse, marginal, darkening at the apices, and irregularly branched. This species is a common inhabitant on barks and rocks of trees.

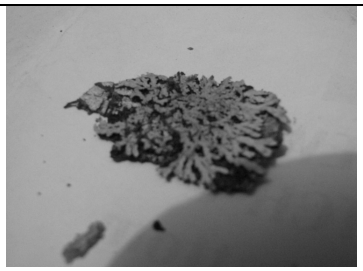
Heterodermia speciosa	*H. albicans*	**Scientific Classification**
		Kingdom : Fungi Division : Ascomycota Class : Lecanaromycetes Order : Teloschistales Family : Physciaceae Genus : Heterodermia
H. diademata	***H. podocarpa***	

Figure 21: Four *Heterodermia sps*

d. *H. podocarpa*

Thallus foliose or subfruticose, small rosettes or irregularly spreading , adnate, lobes 0-5-3 mm wide, sublinear, convex, irregularly branched, ciliate with whitish simple cilia 1-2 mm long scattered along the margins. Upper surface is greyish white or grey. Lower surface is whitish. Rhizines are simple or irregularly branched, whitish 1-2 mm long. Apothecia are very commonly seen.

3.3.6 *Caloplaca granularis*

	Kingdom--Fungi Division—Ascomycota Class—Lecanoromycetes Order—Teloschistales Family—Teloschistaceae Genus—Caloplaca
Figure 22: ***Caloplaca granularis***	

This is a crustose lichen, composed of a number of distinct species. Members of the genus are commonly called 'firedot lichens', 'jewel lichens', ' gold lichens ' or ' orange lichens' .The body of the lichen is an oily dark brown to grey colour , which means , it can be overlooked against the rock in which it grows. The fruiting bodies are slightly more obvious when they appear being orangey- brown in colour, sometimes bright red though very small.

4. Discussion

The present study was conducted in the ponds, water channels, soil surfaces, tree barks and the collected specimens were classified into Algae, Fungi and Lichens. Eight algae, eight fungi, and six lichen genera were collected and studied. The study revealed 8 algal members which were predominantly found in canals, water channels of Vagamon area. Of these, three members belonged to Chlorophyceae, 2 diatom species belonged to Bacillariophyceae and 3 members belonged to Cyanophyceae. The algae belonging to Chlorophyceae were *Oedogonium*, *Spirogyra* and *Chara* and algae belonging to Cyanophyceae were *Chlorogloea*, *Lyngby*a and *Oscillatoria*. The members belonging to the family Bacillariophyceae were *Pinnularia* and *Navicula*. This season has been considered to be suitable, since the water bodies were filled with sufficient water and surrounding areas remaining damp which enriched the growth of several algal members.

The season chosen for study mainly favoured the growth of Chlorophycean and Cyanophycean members. Chlorophyceae showed dominance of algal members in the following order----*Spirogyra* and *Oedogonium*, while *Chara* was obtained from a single area only. Among the Cyanophycean members, *Oscillatoria* was found to be predominantly present in the water bodies and *Chlorogloea* and *Lyngbya* were comparatively less. It is a common observation that the water bodies containing abundance of Cyanophycean members produces a bad odour [5].

Colonial form of algae was represented by *Chlorogloea*. Filamentous (unbranched) forms of algae observed in this study were *Lyngbya, Oscillatoria, Spirogyra* and *Oedogonium*. Filamentous branched forms were completely absent. Most diatoms are unicellular, although they can exist as colonies in the shape of filaments or ribbons or stars. Diatoms like *Pinnularia* and *Navicula* are photosynthetic organisms, ranging in size from a single cell. They play an important role in global ecology, producing about a quarter of all the oxygen within earth's biosphere and serving as keystone species in the food chain on many environments, where they provide a staple food for the diets of many aquatic species [6].

It was also observed that the water bodies which showed the abundance of *Oscillatoria* were polluted by dead and decaying organic matter. Thus these algae can be considered as indicators of pollution [7]. Generally, running water streams showed more growth of filamentous forms and stagnant water shows predominance of bacillariophycean and cyanophycean members.

The study also revealed 8 fungal members which are predominately found in soil and tree barks of the area under study, of which only one member belonged to Ascomycotina and the rest belonged to Basidiomycotina. The member under Ascomycotina was *Xylaria* and the rest seven members belonged to different orders of Basidiomycotina. They are *Auricularia auricula, Ganoderma lucidum, G. applanatum, Lentinus sps, Pycnoporus, Mycena viscosa, Schizophyllum commune* and *Dictyophora indusiatus.* The genera fall under Ascomycotina comes under the order

Xylariales. The rest 7 genera fall under the orders Auriculariales, (*Auricularia*), Polyporales(*Ganoderma, Lentinus* and *Pycnoporus*) ,Agaricales (*Mycena* and *Schizophyllum*) and Phallales (*Dictyophora indusiatus*).

Xylariales is a large order of unitunicate, Perithecial ascomycetes . Production of well-developed stromata, perithecial ascomata with thick walls, eight spored unitunicate asci with an apical apparatus, ascospores usually pigmented and possess germ spores or germ slits and may be transversely septate and a mucilaginous sheath are characters unique to this order. The nutrition is strictly saprotrophic. Order xylariales has only one representative-- *Xylaria.* Auriculariales or jelly fungi possess gelatinous basidiocarps. They produce spores on septate basidia. Auriculariales are believed to be saprotrophic in nutrition.

Polyporales, the next highest order, has 3 representatives belonging to 2 families—Ganodermataceae and Polyporaceae. *Ganoderma* may be saprotrophic or even parasitic while *Lentinus* and *Pycnoporus* are strictly saprobic. *Ganoderma* is often perennial [8]. Since this has extensive uses in traditional medicines they are an important genus economically. *Ganoderma lucidum* is well known to promote health and longevity, lowers the risk of cancer and heart disease, and boosts the immune system [9].

Ganoderma is inedible while many species of *Lentinus* are edible and nutritive and has been used because of the significant quantities of proteins, carbohydrates, fats, minerals and vitamins present in them [10]. Many species are used medicinally for several diseases including AIDS, cancer, hypertension, bronchial allergies and is a source of several proven pharmacological projects [11].

Like *Ganoderma*, *Pycnoporus* is also inedible, but used industrially as a source of powerful lignolytic enzymes that degrade paper and plastics. A Distinctive feature is its colour ranging from orange to bright red attributed to Cinnabarin, Cinnabaric acid like compounds present in them [12].

The next order Basidiomycotina which has representatives is Agaricales. They produce the largest fruiting bodies and function as decayers, pathogens, parasites and mutualistic symbionts of both plants and animals. The genera under Order Agaricales belongs to 2 different families—Mycenaceae (*Mycena viscosa*), Schizophyllaceae (*Schizophyllum commune*). Physical features used for the identification of Mycenoid mushrooms include same colour of the cap, stem and gills, and the manner in which the gills are attached to the stem, and the same colour of the edges of the gill and the stems. Mycenoid mushrooms when squeezed produces distinctive odours like that of radish, iodine or mealy. Further Mycenoids generally possess conical shaped cap and a thin stem that is not tough or wiry and is usually sticky in nature. Schizophyllaceae includes members that look very much like an oyster mushroom, but often it assumes one-fifth the size of oysters. The gills turn out to be merely folds on the under surface, they are distinctively split or doubled.

Of the different families in the order Agaricales, Mycenaceae is saprobic in nutrition while Schizophyllaceae is found to be parasitic in nature.

The spore colour of mushrooms presents another criterion for the identification of mushrooms. Mushroom spores are of several colours e.g. white, green, orange, brown cream etc which are the generic features. Spores are produced on basidia formed in gills of the basidiocarp. The spore print is a simple method used for the identification of gilled fungi [13]. Among the mushrooms studied, *Auricularia, Lentinus* and *Schizophyllum* produced whitish spore print, *Ganoderma lucidum* produced brown spore print, *Dictophora indusiatus* produced black-brown spore print and *Mycena* produced creamish white spore print and can be used as a tool for mushroom identification [14].

The next highest order is Phallales represented by a single member—*Dictyophora indusiatus*. Phallales comprise a group of ill-smelling brown capped fungi, the foul smell often attracts insects that carry the spores on their feet and thus

reproduction is carried out. Most genera under the order Phallales are inedible, but *Dictyophora* in dried form is marketed in China and Hongkong.

The Lichen genera includes 6 representatives-, *Cryptothecia* sps, *Collema nigrescens, Hypotrachyna* , two species of *Parmotrema*, four species of *Heterodermia* and *Caloplaca* granularis all belonging to the division Ascomycota, under the class Arthoniomycetes and Lecanaromycetes. Class Arthoniomycetes has one genera *Cryptothecia* in the order Arthoniales. Arthoniomycetes have apothecia cup shaped or saucer shaped in which the hymenium is exposed at maturity. Apothecia are bitunicate.

Class Lecanaromycetes is classified into Teloschistales(*Caloplaca*, *Heterodermia*), and Lecanorales (*Collema*, *Hypotrachyna* and *Parmotrema*). In Lecanoromycetes, the asci release spores by rostrate dehiscence.

Of the several lichens collected, *Cryptothecia* and *Caloplaca* are Crustose and the rest are Foliose type, but can be morphologically distinguished. *Cryptothecia* often forms circular crust like patches with a reddish pigmentation while *Caloplaca* is an oily dark brown or grey colour.

Hypotrachyna resembles an aggregate of *Parmelia* characterized by narrow apically truncate lobes, a black lower surface and dichotomously branched rhizines. *Heterodermia* as the name suggests, refers to the contrast between the upper and lower surface of the lichen. The colour of the upper surface is similar to that of *Parmelia*, but is glossy with repeated branching. The lower surface may be white to grey black. The lower surface of this lichen differs from the upper surface in that it is grooved and has powdery or cob web like centre. Rhizines may assume white to black colours and densely branched [15].

Collema often can be distinguished by its resemblance to bat's wing or buttons. It is blackish green when wet, and dark brownish green to dark olive when dry. *Parmotrema* on the other hand is easily distinguished by its grey- green thallus that is loosely attached to the substratum.

The diversity in thallophytes is mainly due to the abundance of trees and other flora and cool and shady atmosphere prevalent in the study area. Since some areas are marshy, it provides water necessary for the growth of algae. Due to the rich vegetation, without much cultivation, the dead and decaying logs of wood and other decaying vegetable matter nourishes the growth of mushrooms. Climatic conditions play an important role in the ecology of lichens. Availability of water, sunlight, moderate to cold climate, unpolluted atmosphere, wind condition and the type of substratum are the major factors responsible for the optimal growth of Lichens present in Vagamon area.

5. Conclusion

From the present study, it has become evident that the area selected for the study abodes a good number of Thallophytes in its rich habitats which are getting depleted due to various factors. Among algae, Chlorophycean and Cyanophycean members were equally dominant. Among fungi, Basidiomycetes showed prominence. Majority of Lichens belonged to foliose group. All genera of lichens were under Ascomycota. However, the number of species would be definitely more, since only scattered study was made from this region. Since the area is without much urbanization the number of lichen genera collected were large. The study will help to understand the diversity of Thallophytes better and give us an insight into the status of biodiversity prevalent in the area of study.

References

1. D D Awasthi, *Bibliotheca Lichenologica*, **1975**, 2, 1, 108.
2. V Ahmadjian, *Bioscience,* **1995**, 45, 3, 124.
3. F E Fritsch. *The Structure and Reproduction of the Algae,* Volume 1, 1st ed., Cambridge University Press, Cambridge, **1935**; **pp.**1-791.
4. G C Ainsworth, *The Fungi: An Advanced Treatise*, 1V, Academic Press, New York, **1973**; pp. 1-1504.
5. S N Pandey and A K Tripathi, *Phykos*, **1988**, 27, pp.38-43.
6. R Subrahmanyan. J. *Indian Bot. Soc. M.O.P.Iyengar Commemorative*, Volume, **1948, pp.**239-266.
7. A K Tripathi and S N Pandey, *Water pollution*, APH Publishing, New Delhi, **2009**, pp. 1-326
8. K M Leelavathy and P N Ganesh. *Polypores of Kerala*, 1st ed., Daya Publishing House, **2000;** pp.1-166.
9. S Wachtel-Galor, B Tomlinson and I F F Benzie, *British Journal of Nutrition*, **2004**, 91, 2, pp.263–269.
10. S T Chang and P G Miles, *Edible Mushrooms and their Cultivation*, Volume 1, CRC Press, Boca Raton, Florida, **1989,** pp.1- 345.
11. Arvind Gulati, N S Atri, Sapan Kumar Sharma and B M Sharma, *World Journal of Diary and Food Science*, **2011,** 6, 2, pp140-145.
12. M Tellez Tellez, E Villegas, A Rodriguez, M L Acosta-Urdapilleta, A O'Donovan and G Diaz-Godinez, *Mycosphere*, **2016**, 7, 10, 1500-1525.
13. R C Dubey and Maheswari K D, *Practical Microbiology*, 3rd ed., S.Chand and Company, New Delhi, **2012**; pp. 1-397.
14. S Rajarathnam and M N Shashirekha, *Mushrooms and Truffles-Classification and Morphology In: Encyclopedia of Food Sciences and Nutrition*, 2nd ed, Academic Press, United States, **2003**; pp.4040-4048.
15. D D Awasthi, *Lichenology in Indian Subcontinent*, Dehradun, **2000**; pp.1-124.

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PHANTOM VOXELISATION AND SIMULATION IN RADIOTHERAPY USING GAMOS

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Abstract

GAMOS which is an imaging technique to diagnose and to conform the incident beams later came to the field of radiation therapy. Using GAMOS you can acquire the size, shape and depth of a cancerous cell. And using that details you could confine the incident beam to the cancerous cell only. Reproduced the whole structure of cancerous cell and the arrangements for the radiation using C++ program in the GAMOS. The specifications for the cancerous cell and beam producer were given as geometry file. We reproduced the whole radiotherapy set-up consisting of a medical linear accelerator, operating at photon energy of 6 MeV. Linac geometry is defined first with target, primary collimator, flattening filter, monitor and jaws xy as its components. Phase space files are generated after each component of the linac. When reading phase space files, a proper management of the original number of events (the number of events in the job that created the phase space) is implemented. The phase space file which is after the jaws is taken into account as primary generator. Scoring on phantom is done. Created the phase space files at 450 and 900 by varying the field size X and Y of the jaws by altering the geometry. By varying the initial displacement, number of voxels, material of phantom and phantom dimensions, changes are analysed.

Keywords: *Phantom voxelisation, LINAC, GAMOS, Phase space,*

1. Introduction

Radiotherapy uses high-energy rays to treat diseases such as cancer. It can be given both externally and internally. External radiotherapy aims high-energy X-rays and similar rays (such as electrons) at the affected area using a large machine. Internal radiotherapy involves having radioactive material placed inside the body. Radiotherapy works by destroying cancer cells in the area that's being treated. Normal cells can also be damaged by radiotherapy, which may cause side effects. Cancer cells cannot repair themselves after radiotherapy, but normal cells usually can.

Intensity of incident beams is different in different directions. Since the tumour is not uniform, we have to make the beam confined to the shape of the tumour cell. Inner cells which is of higher density is to be treated more than that at the borders which is of lesser thickness. Due to these all ununiformed structure the exposure of the tumour cells may be so difficult to manage. Any displacement of the target region during the course of irradiation leads to larger inhomogeneity of dose deposition, so that undesirable hot or cold dose spots can occur in tumour and in healthy tissue.

With the development of highly conformal treatment techniques, such as Intensity Modulated Radiation Therapy (IMRT) as well as 3D Conformal Radiotherapy (3D-CRT), the quest for advanced imaging modalities allowing a precise localization of target and organs at risk is increasing. As well known, an accurate patient positioning is crucial to achieve the desired results in radiotherapy (RT) treatments. You can have IMRT on a standard radiotherapy machine, called a linear accelerator (LINAC). The LINAC has a device called a multi-leaf collimator. The multi-leaf collimator is made up of thin leaves of lead which can move independently. They can form shapes that fit precisely around the treatment area. The lead leaves can move while the machine moves around the patient. This shapes the beam of radiation to the tumour as the machine rotates. This means that the tumour

receives a very high dose and normal healthy cells nearby receive a much lower dose. Each radiotherapy beam is divided into many small beamlets that can vary their intensity. This allows different doses of radiation to be given across the tumour. IMRT can also create a U shaped (concave) area at the edge of the radiotherapy field. This avoids high radiation doses to structures that would otherwise be damaged by the radiotherapy. So IMRT can reduce the risk of long term side effects. It is very helpful in areas such as the head and neck, for example to avoid the spinal cord or salivary glands.

VMAT is a new type of IMRT technique. The radiotherapy machine rotates around the patient during treatment. The machine continuously reshapes and changes the intensity of the radiation beam as it moves around the body. Giving the radiotherapy in this way makes it very accurate, shortens the treatment time, and uses a lower overall dose of radiation.

Monte Carlo (MC) simulation method is most used accurate method in Radiotherapy dose calculation. This method uses fundamental physics principles to analyse the propagation of particles. In order to achieve a greater accuracy we have to include a large number of particle histories and that makes the consumption of long computation time.

Simulation of treatment is necessary before beginning the radiotherapy. GEANT4 is a widely used Monte Carlo (MC) system implemented in the C^{++} programming language for simulating the passage of particles through matter. As a general purpose system, it provides a set of generic tools to model experimental set-ups and to transport particles through them. GEANT4 is extremely versatile, but such flexibility comes with the price of requiring some expertise in C^{++} and object oriented programming.

Several software frameworks have been developed to facilitate the use of GEANT4 in a specific field by providing pre-compiled applications whose

functionality are accessible through a scripting language, which avoids the need to write C^{++} code. Among them, we can cite some in the High Energy Physics field, like OSCAR, ATHENA, or GIGA some in the Space Physics field, like MULASSIS and GRAS or some in the Medical Physics field, like GATE, or PTSIM and TOPAS.

GAMOS is a framework to do GEANT4 simulations in different physics fields including Medical Physics. The first objective of GAMOS is to provide an easy, script-based language, architecture that substitute the C^{++} programming usually required for Geant4 simulations. This scripting language covers almost all the needs in the medical physics domain, so that a normal user would not require to add any extra C^{++} code to run its application, but only select in the input script file the options GAMOS provides. Nevertheless, in the field of nuclear medicine the Monte Carlo codes are mainly used today for research purposes. Researchers often want to have a deep understanding of the details of a simulation or want to try new things. This is why the authors of GAMOS do not assume that every need of a nuclear medicine simulation user can be covered, as an expert user will likely require sooner or later some peculiar functionality that is not foreseen in the framework. To satisfy this, GAMOS includes as a main objective from its first inception the provision of a flexible framework. We consider that the best way to achieve this is the to base GAMOS on the plug-in technology, so that a user can write a new component, transform it into a new plug-in in a very easy way and then select this new component with a user command in the initial script, mixing it seamlessly with the other GAMOS or own components. Through a modular design, together with a clear documentation and step-by-step examples of each plug-in type (geometry, physics, generator distribution, user actions, etc.) we have tried to make easy the writing of this extra functionality with a minimal knowledge of C^{++} or Geant4 details.

2. Materials and Methods

In medical field, GAMOS covers all the basic needs for the simulation techniques. The GAMOS is comprised of two layers. Core layer is for medical simulations and the top layer is mainly for the extra functionalities like PET and Radiotherapy. But a general user does not need to choose between these two layers. He/she can use GAMOS according to his/her needs. That is, they can write their own text scripts using different commands. Core components of GAMOS are geometry, physics, primary particles, user actions, signal processing, scoring, histogramming.

GAMOS provides the possibility of building the geometry through a text file. The format is based on simple tags whose meaning is self-explanatory. The user can define the data from Geant4 database. This includes isotopes, elements, materials, solid types, placement of solids and parameters. The Geant4 material database includes all elements from Z=1 to Z=107, all one-element materials from Z=1 to Z=98 plus almost 200 materials common to the nuclear medicine domain. PET and Radiotherapy materials are also included in GAMOS for user convenience. The Geant4 solid type includes shapes such as twisted solids, tessellated solids and boolean operations as well. Also all types of Geant4 placements are supported: simple, division, replica, assemblies and a few parameterisations (linear, square and circular), including the use of reflections. Rotations matrices to be used in placements can be defined in three different ways: by giving the angle of rotation around the X, Y and Z axis, by giving the theta and phi angle of each of the three axis after rotation or by giving the nine elements of the rotation matrix. Colour and transparency can be selected for each volume and the visualisation of a volume can be switched off. The user can also define the parameter as number or string using the text script.

An example for a simple geometry

```
// Define parameters
:P POSZ 5.
:P Hmass 1.00794
:P Omass 15.999
// Define elements and materials
:ELEM Hydrogen H 1. $Hmass
:ELEM Oxygen O 8 $Omass
:P WaterMass 2.*$Hmass+$Omass
:MIXT Water 1.*g/cm3 2
Hydrogen 2.*$Hmass/$WaterMass
Oxygen $Omass/$WaterMass
// Define and place volumes
:ROTM RM0 0. 0. 0. // unit rot. matrix
:VOLU world BOX 100. 100. 100. G4_AIR
:VOLU "my tube" TUBE 0. 10. 20. 0. Water
:PLACE "my tube" 1 world R00 0. 0.
$POSZ+10*cm
```

GAMOS provides a physics list, selectable by a user command that includes all the electromagnetic processes. The use of different models (standard, low energy or Penelope) can be selected for each particle type through a user command. Another physics list provides the needed hadronic processes for simulation of a Hadrontherapy setup. The user may also describe the physics list in the standard Geant4 way, through

a C^{++} class inheriting of G4V User Physics List. Adding a line before compiling this class will transform it into a plug-in, so that this physics list can be selected through a user command in the input script file.

The GAMOS primary generator supports the creation of several numbers of particles or decaying isotopes in the same event. For each particle or isotope the user may select a different distribution of time, energy, position or direction, or use the default one provided. The most common distributions used in nuclear medicine are available, and the user may easily create a new one with a few lines of code following the examples provided, and after transforming it into a plug-in use it the same way as any GAMOS distribution. The primary generator can be described in the standard Geant4 way, through a C^{++} class inheriting of G4V User Primary Generator Action. Adding a line before compiling this class will transform it into a plug-in, so that this primary generator can be selected trough a user command in the input script file.

2.1 Geometry

We developed a Monte Carlo simulation using GAMOS, a simulation toolkit provided by Geant4, originally developed for high energy physics and currently applied also in the field of medical radiation physics. We reproduced the whole radiotherapy set-up consisting of a medical linear accelerator, operating at photon energy of 6 MeV. Linac geometry is defined first with target, primary collimator, flattening filter, monitor and jaws xy as its components.

Figure 2.1: the main components of the head of a medical linac from the top, electrons impact on the copper target, leading to the production of bremsstrahlung photons circular primary collimator_0(made of tungsten), primary collimator_1(made of air) monitor chambers(made of air) and two pairs of jaws for secondary collimation(made of tungsten)

2.2 Writing a Phase Space File

Phase space files are generated after each component of the linac. The data generated will correspond to the position at which the phase space file is generated. The phase space file is written according to the International Atomic Energy Agency (IAEA) format, which was created with the aim of becoming a standard in MC simulations. Another set of user commands are available to read back the IAEA phase space files and use them as the source of primary particles.

The writing of phase space can be done automatically in GAMOS by selecting the user action
/gamos/userAction RTPhaseSpaceUA

When a particle crosses any of the planes defined by the parameter
/*gamos/setParam RTPhaseSpaceUA:ZStops* Z_1 Z_2 Z_3 ...

Its information is stored in a file whose named is given by the parameter
/*gamos/setParam RTPhaseSpaceUA:FileName* MY_FILENAME

plus a suffix .IAEAphsp. The default value of this parameter is test. If there are several Z planes, the Z value of each plane will be added to the name, with a "_" in front, so that each phase space will go to a different file. If there is only one Z defined, the Z value may be written in the file name if the following parameter is set
/gamos/setParam RTPhaseSpaceUA:ZStopInFileName TRUE
If the plane crossed is the one with maximum Z, the particle may be stopped, if the following parameter is set
/gamos/setParam RTPhaseSpaceUA:KillAfterLastZStop TRUE

The format of the phase space files is the one defined by the IAEA, generated using the official C files from IAEA. First there is a header file, that will have the same name, but with the suffix '.IAEAheader.' The Z value may optionally be stored if the following parameter is set */gamos/setParam RTPhaseSpaceUA:StoreZ* TRUE

2.3 Reading a Phase Space File

When reading phase space files, a proper management of the original number of events (the number of events in the job that created the phase space) is implemented. The phase space file which is after the jaws is taken into account as primary generator.

2.4 Creating a Simple Phantom

The user may build simple regular phantom geometries without the need of writing a DICOM file by using

/gamos/geometry GmSimplePhantomGeometry

The number of voxels is defined with the parameter

/gamos/setParam GmSimplePhantomGeometry:NVoxels NVOXEL_X NVOXEL_Y NVOXEL_Z

The minimum and maximum extensions in the three axes are defined with the parameter

/gamos/setParam GmSimplePhantomGeometry:PhantomDims MIN_X MAX_X MIN_Y MAX_Y MIN_Z MAX_Z

Then you can divide the phantom in different regions along the Z axis with the parameter

/gamos/setParam GmSimplePhantomGeometry:MaterialZVoxels NZ_1 NZ_2 ...

where NZ_i is the number of voxels along Z of the i region.

Then you can assign the material and material densities of each Z region with the parameters

*/gamos/setParam GmSimplePhantomGeometry:MaterialNames MATERIAL_1 MATERIAL_*2 ...

*/gamos/setParam GmSimplePhantomGeometry:MaterialDensities DENSITY_1 DENSITY_*2 ...

2.5 Score Dose in Phantom

Scoring in a phantom shows how much dose is to be deposited on the affected organ. Scoring is different in different regions of the phantom depending on the intensity of tumour. Based on the scoring we could generate a depth dose curve. The scoring of the dose in the phantom volumes can be done using the scorer *GmG4PS Dose Deposit* and selecting as detector the voxels that are named as patient.

/gamos/scoring/create MF Detector Dose Det patient

/gamos/scoring/add Scorer2MFD Dose Scorer GmG4PS Dose Deposit Dose Det

2.6 Scoring on the Generated Phantom by the Phase Space Produced

Scoring is done by the specific input programs and result is noted.

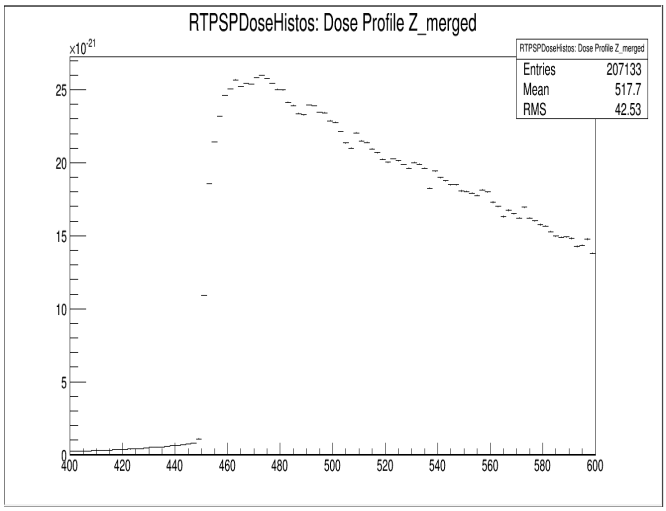
2.7 Generation of Test Phase Space Files at 450 and 900

We created the phase space files at 450 and 900 by varying the field size X and Y of the jaws by altering the geometry. By varying the initial displacement, number of voxels, material of phantom and phantom dimensions, changes is analysed.

3. Results and discussions

Test 450

Here the phantom created is of water. The number of Z voxels is 100 and the phantom dimension is -100 100 -100 100 -100 100. The initial displacement of the phantom is 500. The depth dose curve obtained for these peculiars is given below



This is how scoring of a dose is pictorially represented. The dose profile along the z axis, ie, the propagation axis, is symmetric about the initial displacement given in the input since the phantom dimension is given symmetric to zero (-100,100). If the phantom dimension started from zero, then the dose profile

Fig 3.1 Dose curve

starts from the initial displacement. The test phase space file is at 450. The radiation falling on the phantom is not uniform. It becomes maximum at 470 here and further decreases while going into the phantom.

Jaw size : 1*cm 1*cm // FIELD_X_RIGHT FIELD_X_LEFT
1*cm 1*cm // FIELD_Y_RIGHT FIELD_Y_LEFT

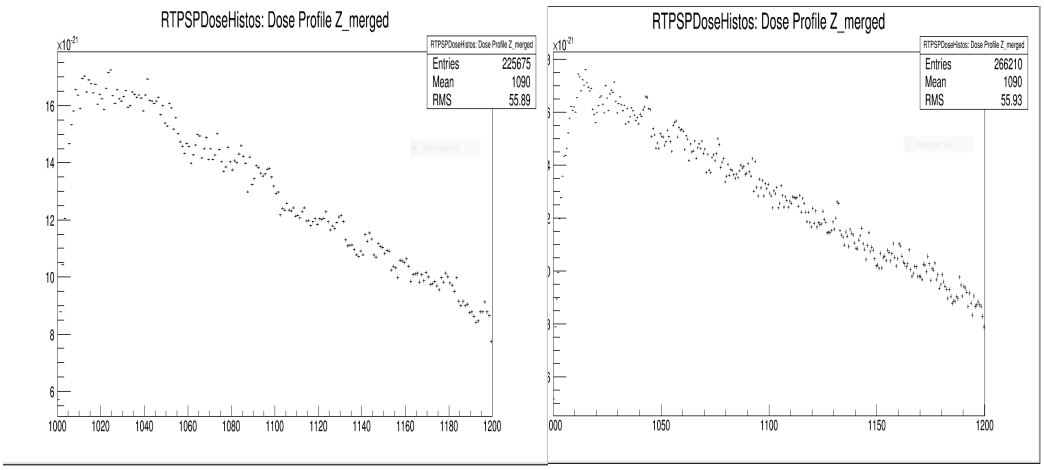


Fig 3.2(a) Fig 3.2(b)

Test 450

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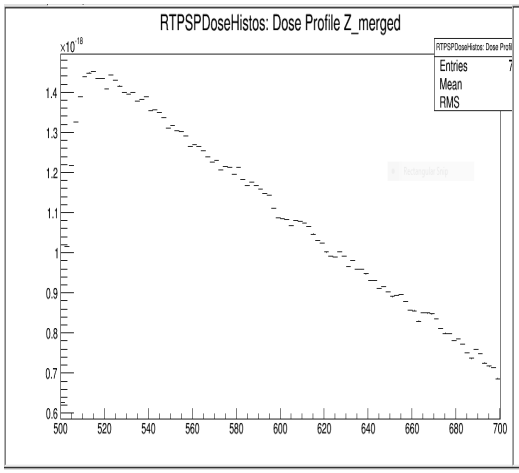
10*cm 10*cm // FIELD_Y_RIGHT FIELD_Y_LEFT



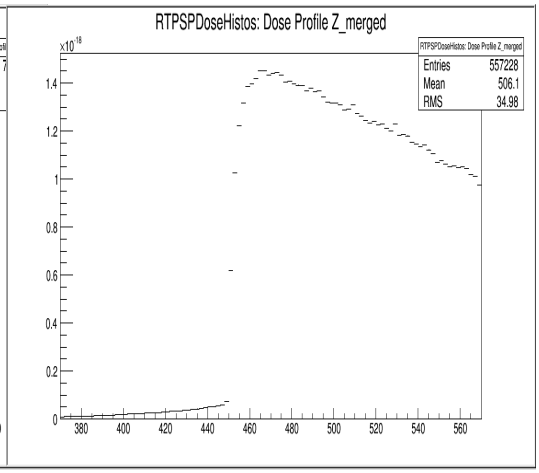
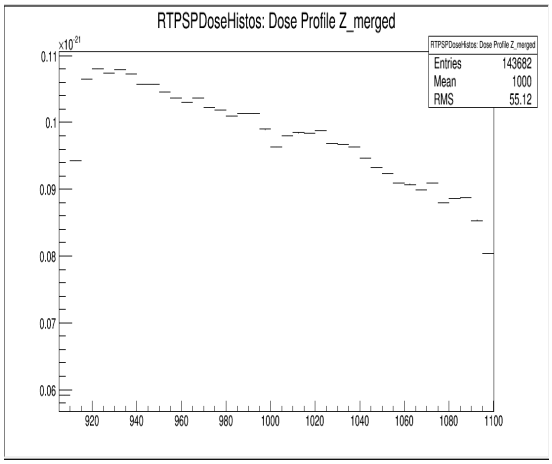


Fig 3.2(a) Fig 3.2(b)

Test 900

Jaw size : 1*cm 1*cm // FIELD_X_RIGHT FIELD_X_LEFT

1*cm 1*cm // FIELD_Y_RIGHT FIELD_Y_LEFT



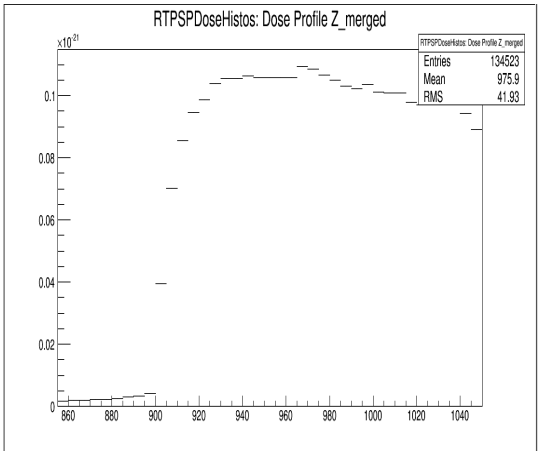


Fig 3.4(a) Fig 3.4(b)

Test 900

Jaw size : 10*cm 10*cm // FIELD_X_RIGHT FIELD_X_LEFT

10*cm 10*cm // FIELD_Y_RIGHT FIELD_Y_LEFT

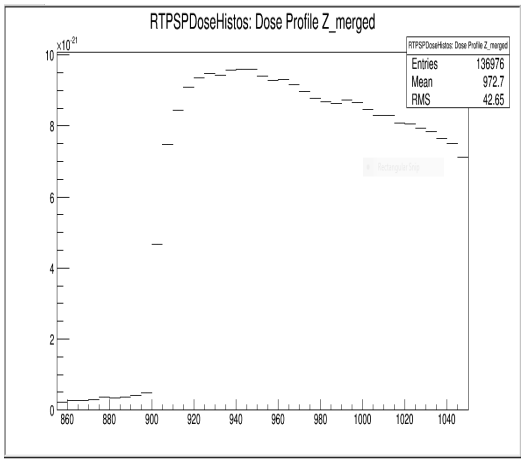


Fig 3.5(a)

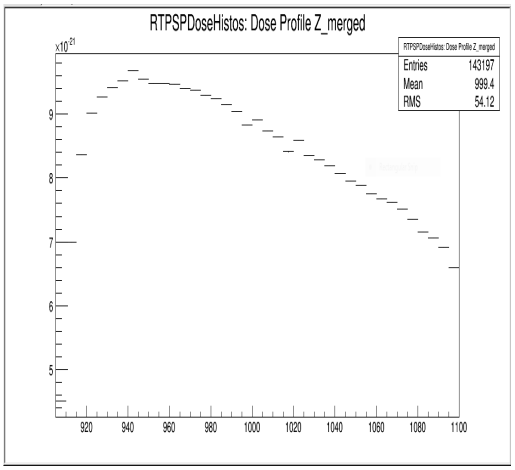


Fig 3.5(b)

4. Conclusion

We developed a Monte Carlo simulation in GAMOS, in order to reproduce the operation of a medical linac coupled with a medical imaging technique, and we implemented a phantom which can be replaced by the cancerous tissue in practice, in order to quantify doses to the main organs at risk. Our simulations confirmed that the scattered radiation during therapy (MV range) is larger than that diffused by CBCT by one to two orders of magnitude. With these results it should be assumed that the daily use of CBCT to verify the correct positioning of the patient during radiotherapy sessions, on one hand allows to optimize the dose delivery and on the other one it does not cause excessive dose absorption to the organs at risk.

Using GAMOS we voxelised and viewed the geometry which is evolved during the phantom voxelisation through a viewer. The VRML file helped to visualise the position, shape and size of the components of the linac. By the use of *PhysicsList* obtained from the database of GAMOS we generated the phase space file which led to plotting of dose profile. Dose profile gives you the variation of dose to the depth of the infected tissue.

Analysing the dose profile, we got the idea that how the parameter changes affect the dose intensity distribution. By defining jaws' field size as 1x1 or 10x10 different dose profiles were obtained accordingly. Using a 1x1 field size, the generated dose profile is different than that of 10x10 since we could confine the incident beam more precisely. For 10x10 the dose profiles are different since the dimension is greater.

By changing the number of voxels and initial displacement the dose profile is found to change. By increasing the number of voxels, the decrease in dose distribution is more notable. While for a lesser number of voxels, the change is not abrupt. That is, the dose absorption rate in the inner region is not much different from the surface.

The change in the phantom dimensions also cause a change in the dose profile. If the phantom dimension is changed from lower values to higher ones, the dose intensity changes abruptly. While in the former case, the change in the dose intensity is gradual.

The different combinations of phantom such as water alone, lung and water etc. results in different kinds of depth- dose profiles. The dose profile is varying according to the character of the material used in the phantom. The dose distribution curve of the combination water- lung- water is not as smooth as water alone since lung is denser than water. That is there is a difference in the rate of absorption of the radiation for each material. Lung absorbs radiation differently than water.

Therefore GAMOS gives an idea of how radiation affects different materials. Using GAMOS database we can analyse the dose profiles of different tissues and organs. This helps to improve the radiation therapy and to calculate the needed dosage of radiation for a particular region/tissue/organ. And also helps to save the normal tissues from the exposure of radiation during the therapy.

References

1. GAMOS 5.0.0 User's Guide
2. PedroArce et al. GAMOS: AframeworktodoGEANT4 simulations in different physics fields with a user-friendly interface.
3. Pedro Arce, Pedro Rato, Mario Ca˜nadas and Juan Ignacio Lagares. GAMOS: a GEANT4-based easy and flexible framework for nuclear medicine applications.
4. S. Leotta, E. Amato, N. Settineri, E. Baisle, A. Italiano, L. Auditore, A.Santacaterina and S. Pergolizzi. *Patient dose in image guided radiotherapy: Monte Carlo study of the CTCT dose contribution,* AAPP, Vol. 96, No. 1, A3 (2018)
5. Xun Jia, Xuejun Gu, Yan Jiang Graves, Michael Folkerts, and Steve B. Jiang. GPU-based fast Monte Carlo simulation for radiotherapy dose calculation.

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CORPORATE GOVERNANCE PRACTICES OF THE FMCG SECTOR IN INDIA:

AN EVALUATIVE STUDY

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Abstract

The integration of countries into the world market in the liberalized economic environment and the continuous occurrence of scams and frauds in the corporate sector increased the relevance of corporate governance. The study aims to find out the corporate governance practices of FMCG sector and also analyse its influence in the overall financial performance of an organization. FMCG sector is the fourth largest sector in the Indian economy and therefore it has a vital role in the overall economic growth of our nation. Corporate Governance Disclosure Index (CGDI) is used for identifying the corporate governance compliance status and Karl Pearson's Correlation Coefficient is used to study the extent of correlation between corporate governance practices and financial performance of the selected organizations. The result shows that there exists substantial degree of positive correlation between corporate governance and financial performance of all the selected companies in the FMCG sector. Therefore it is concluded that the corporate governance compliance status greatly influence the overall financial performance of the organizations in the FMCG sector.

Keywords: *Corporate governance, FMCG sector, CGDI, Financial performance*

1. Introduction

Corporate governance has become the latest buzz word in the corporate sector in the world. At present, corporate sector cannot ignore the importance of corporate governance due to the integrations of country into world market in the liberalized economic environment. Several frauds and scams occurred in the corporate history of the world. One after the other collapses of leading companies like Robert Maxwell, Enron, Satyam and other scams due to the poor corporate governance and due negligence of responsibilities by board, pulls the attraction of investors towards corporate governance.

Corporate governance is concerned with set of principles, ethics, values, morals, rules, regulations and procedures etc. corporate governance is the mechanisms, processes and relations by which a corporation is controlled and directed. It means carrying the business as per stakeholder's desires. Corporate governance establishes a system whereby directors are entrusted with duties and responsibilities in relation to the direction of the company's affairs. It is actually conducted by the board of directors and the concerned committees for the benefit of company's stakeholders. It is all about balancing individual and societal goals, as well as, economic and social goals. Corporate governance concept emerged in India after the second half of 1996 due to economic liberalization and deregulation of industry and business. Corporate governance is the interaction between various participants consist of shareholders, board of directors, company's management in shaping corporation's performance and the way it proceeding towards.

Good corporate governance in the changing business environment has emerged as powerful tool of competitiveness and sustainability. Good corporate governance is a key factor in underpinning the integrity and efficiency of a company. It is very important at this point and it needs corporation for one and all i.e. from CEO of company to the ordinary staff for the maximization of the stakeholder's value

and also for maximization of pleasure and minimization of pain for the long term business.

Indian corporate bodies having adopted good corporate governance will reach themselves to a benchmark for rest of the world; it brings laurels as a way of appreciation. The importance of corporate governance lies in promoting and maintains integrity, transparency and accountability throughout the organization. Under the present scenario, stakeholders are given more importance as to shareholders, they even get chance to attend, vote at general meetings, make observations and comments on the performance of the company. Corporate governance from the futuristic point of view has great role to play. The corporate bodies in their corporate have much futuristic approach. They have vision for their company, on which they work for the future success. They take risk and adopt innovative ideas, have futuristic goals, motto and future objectives to achieve. With increase in interdependence and free trade among countries and citizens across the globe, internationally accepted corporate governance are of paramount importance for Indian companies seeking to distinguish themselves in global footprint. The companies should always keep improving, enhancing and upgrading themselves by bringing more reliable integrated product and service quality. They should be transparent in their conduct.

As, In India the emergence of Corporate Governance took place in the year 1996. Many committees formed and issued various recommendations to comply with CG norms voluntarily like CII (Confederation of Indian Industry), Kumar Mangalam Birla Committee by SEBI, Naresh Chandra Committee, Narayan Murthy Committee, etc. Finally in the year 2001, SEBI (Securities & Exchange Board of India) mandated the recommendations given by Kumar Mangalam Birla Committee as a new CG Code of Conduct in the listing agreements with stock exchange, also known as Clause -49.

Fast Moving Consumer Goods (FMCG) sector is the fourth largest sector in the Indian economy with household and personal care accounting for 50 percent of

FMCG sales in India. Growth of FMCG sector has a vital role in the overall economic growth of our nation. Corporate governance practices influessnce the overall performance of the organization.So theCorporate governance practices in the FMCG sector have a great influence in the growth of our Indian economy. In this context the present research study titled "CORPORATE GOVERNANCE PRACTICES OF THE FMCG SECTOR IN INDIA: AN EVALUATIVE STUDY" is undertaken.

2. Review of Literature

2.1 Rajesh Chakrabarti and Mandar Kagade in their study "CORPORATE GOVERNANCE-EVOLUTION AND CHANGES IN THE NEW COMPANIES ACT" (2014) noted the major differences brought about in the companies act 2013 from the much amended version of 1956. From the study, it has been concluded that the Companies act, 2013 reflects and regularizes several developments that have gradually in the country and in the world of financial market and corporate governance and necessitated the modernization.

2.2 Deepinder Kaur and Tajinder Kaur (2015) in their study "CORPORATE GOVERNANCE DISCLOSURE PRACTICES OF PUBLIC AND PRIVATE SECTOR BANKS: A COMPARITIVE STUDY" analyze the corporate governance practices of five banks each in public and private sector. The main objective is to make a comparative study of corporate governance disclosure practices in public and private sector banks. Disclosure index was used as a tool for the study. From the study it has been found that State Bank of India (public sector bank) and Yes Bank (private sector bank) are making the most disclosures and thus complying with clause 49 to a great extent regarding the disclosure of important parameters in their corporate governance report.

2.3 Meenu Maheshwari & Sapna Meena (2015) in their study "CORPORATE GOVERNANCE PRACTICES: A COMPARATIVE STUDY OF SBI AND

HDFC BANK" identified and compared the effectiveness of corporate governance between SBI and HDFC bank. The main objective is to critically examine the corporate governance practices prevailing in the banking sector of India. From the study, it was observed that SBI is keen implementing best practices with regard to corporate governance practices.

2.4 Taruna and Arpit Shailesh (2015) in their study "A STUDY ON CORPORATE GOVERNANCE PRACTICES IN INDIA" analyzes the situation of corporate governance practices of 100 companies from ten diverse industry sectors in India. The main objective is to explore and examine the corporate governance mechanisms in India during 2015. From the study, it has been concluded that firms in India following good corporate governance practices as per mandatory and non-mandatory guidelines of clause 49 of listing agreement. One way ANOVA was used as a tool for the study.

2.5 S. Gayathri (2015) in her study "A COMPARATIVE STUDY OF THE CORPORATE GOVERNANCE PRACTICES OF SELECTED PUBLIC AND PRIVATE SECTOR COMMERCIAL BANKS IN INDIA" analyze the disclosure practices of ten banks have been made for a period of five years. The main objective of the study is to review the existing system of corporate governance in Indian banking sector by analyzing the disclosure practices and to make suitable suggestions for its improvement. Corporate governance disclosure index was used as a tool for the study. From the study, it was found that HDFC bank is ranked first, second rank obtained by ICICI, third rank by Bank of Baroda, fourth and fifth places by Kotak Mahindra and Axis bank, PNB is ranked sixth, Federal bank is ranked seventh, last three places by Canara, SBI and Bank of India.

2.6 Sonal Nena (2015) in her study "A COMPARATIVE STUDY OF CORPORATE GOVERNANCE PRACTICES BETWEEN State Bank of

India (SBI) and United Bank of India (UBI)" measure the compliance to the disclosure norms in the selected companies by applying corporate governance index. The main objective is to know the concept of corporate governance in general and in relation to Indian public sector banks in particular. From the study it has been found that both of the banks complied with CG code of conduct as per clause 49 of listing agreement for the year 2012-13 but SBI score more than that of UBI due to non-compliance with the 'Chairman-CEO Duality'.

3. Statement of The Problem

Corporate governance is the application of best management practices, compliance of law in true letter and spirit and adherence to ethical standards for effective management and distribution of wealth and discharge of social responsibility for sustainable development of all stakeholders. Corporate governance is concerned with ways of bringing the interests of investors and manager into line and ensuring that firms are run for the benefit of investors. FMCG sector companies now accounts for about 50% of total rural spending and about 40% of urban spending and become the fourth largest sector in the Indian economy. Corporate governance practices in the FMCG sector influence the overall performance especially financial performance of the sector. As FMCG sector is the fourth largest in the Indian economy, it has a vital role in the economic growth of our nation. In this present situation the corporate governance practices of the selected companies and their impact on their overall performance was evaluated.

4. Significance And Scope of The Study

Corporate governance basically relates to enhancement of corporate performance and ensures proper accountability for management in the interest of all stakeholders. . Compliance with the corporate governance norms is itself discloses the transparency and accountability of the organization. It is mandatory as per the clause 49 of the listing agreement to comply with the CG norms. Some code of conduct is

mandatory where as some are voluntarily to adopt. Corporate governance ensures organization is managed in a manner that fits the best interest of all and it also minimizes the wastages, corruptions, risks and mismanagement. It is to be evaluating how efficiently the organizations in FMCG sector comply with the CG norms i.e. to evaluate whether the corporate governance practices in the FMCG sector enhances the corporate performance.

The study was confined only to the selected companies in the FMCG sector. The corporate governance disclosure index developed in this study can be applied to the companies in other sectors also. Companies can utilize this CGDI for improvement in the corporate governance practices as well as their overall performance. Findings of the study are useful for the prospective investors, regulatory authorities and other institutions for appropriate decision making.

5. Objectives

- To identify the corporate governance practices of the selected companies in the FMCG sector.
- To measure the corporate governance compliance status of selected companies in the FMCG sector.
- To analyze the relationship between corporate governance compliance status and overall financial performance of the selected organizations in the FMCG sector.

6. Hypothesis

- H_0: There is no significant relationship between the corporate governance and financial Performance
- H_1: There is significant relationship between the corporate governance and financial performance

7. Research Methodology

7.1 Source of Data

The complete study is based on the secondary data, which has been taken from the reliable sources like corresponding company's websites, Annual reports, corporate governance reports, business responsibility reports, journals and other online sources were the major source of the data.

7.2 Sample

The sample for the study comprises 6 companies in the FMCG sector. On the basis of stratified sampling, FMCG sector was classified into two strata namely- large cap and mid cap. From each stratum, 3 companies were selected using purposive sampling method. Capital and net profits were the criteria used for purposive sampling.

The list of selected companies from FMCG sector is as follows:

LARGE CAP FMCG COMPANIES

- Hindustan Unilever Limited (HUL)
- Dabur India Limited (DIL)
- ITC ltd

MID CAP FMCG COMPANIES

- Britannia Industries ltd
- Marico ltd
- Jyothy Laboratories ltd

7.3 Statistical Tools For Data Analysis

In this research, following statistical tools are used:

- CORPORATE GOVERNANCE DISCLOSURE INDEX

  CGDI is used to study the compliance of corporate governance norms of SEBI and Companies act, 2013 by the companies in FMCG sector.

- KARL PEARSONS CORRELATION COEFFICIENT

  It is used to find out the degree and direction of relationship between two variables i.e. corporate governance and financial performance and thereby testing the hypothesis.

7.4 Period of The Study

The study is confined to a period of seven years i.e. from 2011-12 to 2017-18

8. Data Analysis And Discussions

Corporate governance compliance requirements are studied by developing a disclosure index after carefully studying the annual reports of the selected companies by taking certain corporate governance requirements as key parameters for corporate governance and assign value to such parameters on the basis of their relevance. The compliance of companies towards the norms of corporate governance can be studied through this index. For content analysis, firstly the annual reports were analyzed and then the disclosure index has been prepared by considering the following key parameters:

- Company's philosophy on corporate governance.
- Board of directors.
- Annual board meetings.
- Audit committee.
- Chairman and CEO duality.
- Remuneration committee.
- Shareholders/ investors grievance committee.
- Risk management committee.

- Special committee for monitoring frauds.
- Nomination committee.
- Disclosures related to related party transactions, whistle blower policy, subsidiary companies, contingent liabilities, CEO/CFO certification, compliance information, auditor's certificate on corporate governance, director's responsibility statement, risk management and internal controls.

- Communication means such as quarterly results, newspaper where in results published normally, any website, display official news and presentation made to institutional investors or to analysts.

- Quarterly report related to CSR and average profit percentage spends on CSR activities.

Corporate governance disclosure index has been calculated for each company in every year and at last find Out the Corporate Governance Disclosure for Each Company during Seven Years by Applying the Following formula

CORPORATE GOVERNANCE DISCLOSURE INDEX

$$= \left\{ \frac{\text{TOTAL CGDI OF SEVEN YEARS}}{\text{MAXIMUM POSSIBLE CGDI INDEX OF SEVEN YEARS}} \right\} * 100$$

Financial performances of companies were analyzed through Profit After Tax (PAT).In order to testing the hypothesis, Karl Pearson's Correlation Coefficient is used.

a) Measure The CGDI of Each Company In Each Years And During The Seven Years

TABLE No: 2.1

CORPORATE GOVERNANCE DISCLOSURE INDEX MEASUREMENT

Sl no	Companies	Corporate Governance Disclosure Index							CGDI of 2011-18 (%)
		2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	
1	HUL	29	29	29	30	34	34	34	89.39
2	DABUR	27	30	31	31	32	33	33	88.57
3	ITC	27	28	30	32	32	32	32	86.94
4	BRITANNIA	27	27	28	32	33	33	33	86.94
5	MARICO	27	27	28	30	29	31	31	82.86
6	JLL	24	30	30	31	31	32	33	86.12

Source: Compiled from annual reports of respective companies

CGDI of all the selected companies in the FMCG sector shows an increasing trend in the compliance status of corporate governance.

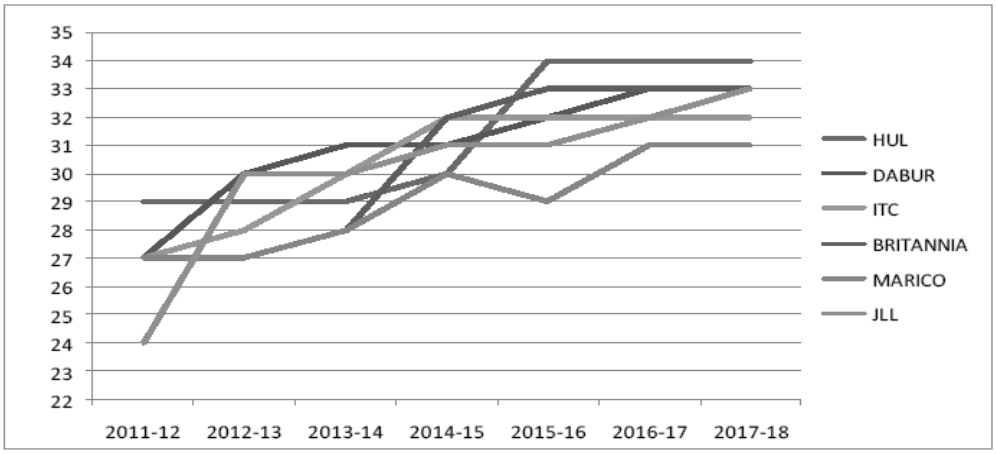

FIGURE No: 1

CGDI OF SELECTED COMPANIES IN FMCG SECTOR DURING 2011-12 TO 2017-18

b) Financial Performance Analysis

Table no: 2.2
Pat of selected companies in fmcg sector

Sl Bo	Companies	Profit after tax						
1	HUL	2599	3314	3555	3843	4116	4490	5237
2	DABUR	645	763	914	1066	1251	1277	1354
3	ITC	6162	7418	8785	9608	9328	10201	11223
4	BRITANNIA	186.74	233.87	369.83	622.41	763.31	843.69	947.89
5	MARICO	317.1	395.9	485.4	573.5	711.5	798.6	814.5
6	JLL	83.52	44.04	106.11	142.79	162.36	202.05	160.54

Profit after tax of all the selected companies in the FMCG sector show a steady increase from 20111-12 to 2017-18.

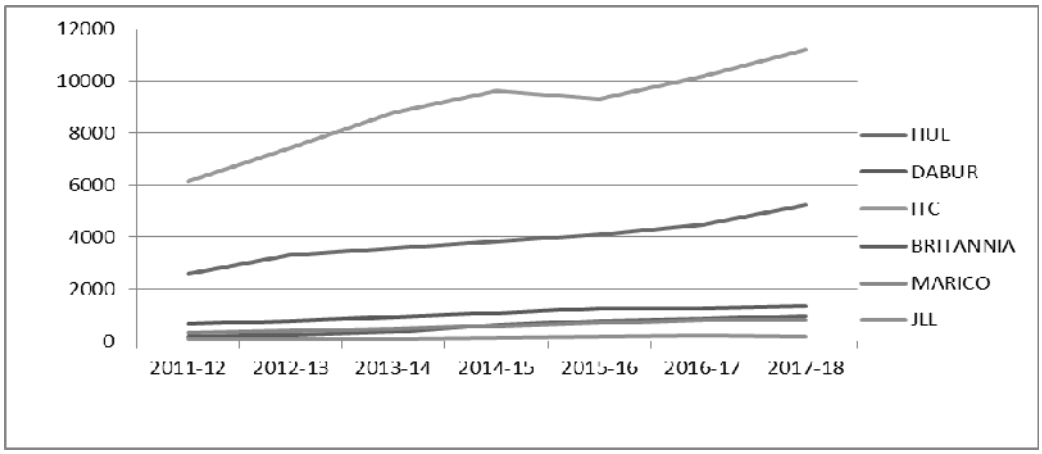

Figure No: 2 : Profit after tax of selected companies during seven years

c) Testing The Hypothesis

TABLE NO: 3

KARL PEARSON'S CORRELATION COEFFICIENT

COMPANIES	CORRELATION COEFFICIENT
HUL	.841
DABUR	.928
ITC	.933
BRITANNIA	.970
MARICO	.867
JLL	.596

Source: Compiled from secondary data

Coefficient of correlation between corporate governance and financial performance revealed that all the companies have a positive correlation. It denotes that the increase in corporate governance improves the financial performance also. Therefore reject the null hypothesis. There is significant relationship between the corporate governance and overall financial performance of the selected companies in the FMCG sector.

In the case of large cap companies, ITC has the highest correlation (0.933) and in the case of mid cap companies, BRITANNIA has the highest correlation (0.970). BRITANNIA shows the highest value in correlation coefficient (0.970) and JLL has the lowest value in correlation coefficient (0.596) between corporate governance and financial performance in the case of all the selected companies in the FMCG sector.

9. Findings

a) COMPLIANCE STATUS OF CORPORATE GOVERNANCE THROUGH DISCLOSURE INDEX

Corporate governance compliance status was revealed through Corporate Governance Disclosure Index of each selected company in the FMCG sector shows betterment in the corporate governance practices year after year from 2011-12 to 2017-18. Based on the CGDI score

- HUL is ranked first with a score of 89.39%.
- The second rank was obtained by Dabur ltd with a score of 88.57%.
- ITC ltd and Britannia are ranked third with a score of 86.94%.
- The fourth and fifth positions are occupied by Jyothi Laboratories ltd and Marico with scores 86.12 and 82.86 respectively..
- There is no much variation among large cap and mid cap companies in the compliance of corporate governance requirements.

b) FINANCIAL PERFORMANCE ANALYSIS

- The overall financial performance shows an increasing trend year after year.
- PAT of HUL, DABUR Ltd, ITC Ltd, BRITANNIA and MARICO shows an increasing trend from 2011-12 to 2017-18.
- But in the case of JLL, PAT shows an increasing trend up to 2016-17 then suddenly decreases in 2017-18.

c) RELATIONSHIP BETWEEN CORPORATE GOVERNANCE AND FINANCIAL PERFORMANCE

- Karl Pearson's Correlation Coefficient shows that there is a positive correlation among corporate governance and financial performance in case of the selected companies in the FMCG sector.

- It gives a clear picture about the influence of corporate governance in the financial performance of the companies.
- Corporate governance disclosure index are positively correlated with the financial performance of the companies in FMCG sector whether it is large cap or midcap companies.

10. Suggestions

- The compulsory enactment of regulations related to corporate governance may improve the corporate governance compliance status.
- Development of CGDI helps in the self-assessment or self-evaluation of the corporate governance compliance status.
- Better corporate governance practices ensure an ethical business environment.
- Increasing the awareness of ethics in business life may help in the betterment of corporate governance practices.
- Availability of information regarding corporate governance practices helps in assessing more useful information regarding corporate governance practices.

11. Conclusion

The importance of corporate governance lies in promoting and maintains integrity, transparency and accountability throughout the organization. The FMCG sector plays a vital role in the overall economic growth of our nation, as it is the fourth largest sector. So the study was conducted to evaluate the influence of corporate governance in the overall performance of the selected organizations in the FMCG sector. The yard stick for corporate governance disclosure in this study is the provisions of Companies act, 2013 and the clause 49 of SEBI deals with mandatory requirements. The study of six companies from the FMCG sector shows an impressive Corporate Governance compliance status at the end of 2017-18 whether it is large cap or mid cap companies. The MCA, SEBI, ICAI, Stock Exchanges etc creates a potential for regulatory ambiguity and weakens the scope for scam and other

malpractices. The corporate governance compliance status comparison before and after the Companies act, 2013 shows the influence of regulatory authority's governance rules in the compliance status of corporate governance. Therefore the proper enactment of compliance requirement by regulatory authorities will improve the corporate governance compliance status of the organizations.

Corporate governance compliance status greatly influenced the overall performance of the companies. This study aims to serve as a beginning to promote independent assessment of the compliance status of corporate governance requirements in the Indian companies. Scope exists for further studies by expanding the size of sample as also coverage of issues. The legal and regulatory system of the country plays a crucial role in creating an effective corporate governance mechanism in the country, the development of markets and economic growth. The regulatory bodies of India have proposed comprehensive and rigorous Corporate Governance reforms which lay emphasis on the significance of the credibility and integrity of the companies, protection of stakeholders, comprehensive disclosures etc. however there are certain gaps and lapses in the compliance requirements leads to the weakness in the corporate governance mechanism and the sustainable growth.

Bibliography

- **Books**

  - Kothari C.R. (2007), *Research Methodology*, Wiley Publications, New Delhi.
  - Shastri C Falguni (2005), *Corporate Governance*, Book Enclave Publishers.
  - ICAI (2016), *Business Law, Ethics And Communication*, New Delhi.
  - Nair Manoharan (2009), *Corporate Governance*, Kalyani Publishers, New Delhi.
  - Upendra Sharma Sunita (2009), *Corporate Governance in India*, New Century Publications, New Delhi – 110 002.

- **Journals / Articles**
  - Chilumuri, Srinivasa and Rao (2013), "Corporate Governance in Banking Sector: A Case study of State Bank of India". *IOSR Journal of Business and Management (IOSR-JBM)*, Volume 8, Issue no: 1, page no: 15-20. Retrieved from www.iosrjournals.org
  - Deepinder Kaur and Taajinder Kaur (2015), "Corporate Governance Disclosure Practices of Public and Private Sector Banks: A Comparative Study". *International Journal of Business Management*, Volume 2, Issue no: 8, Page no: 908-920. Retrieved from http://www.ijbm.co.in
  - Meenu Maheshwari and Swapna Meena (2015), "Corporate Governance Practices: A Comparative Study of SBI and HDFC Bank". *International Journal of Research in IT, Management and Engineering,* Volume 5, Issue no: 5, page no: 7-27. Retrieved from http://www.indusedu.org
  - S.Gayathri (2015), "A Comparative Study of the Corporate Governance Practices of Selected Public and Private Sector Commercial Banks in India*". International Journal of Business and Administration Research Review*, Volume 1, Issue no: 12, Page no: 114-119.
  - Sonal Nena (2015)' "A Comparative Study of Corporate Governance Practices Between State Bank of India (SBI) and United Bank of India (UBI)". *International Journal of Advance Research in Computer Science and Management Studies,* Volume 3, Issue no: 8, Page no: 150-157. Retrieved from http://www.ijarcsms.com
  - Suresh V.N (2012), "Corporate Governance Practices of Listed Companies in India". *IOSR Journal of Business and Management (IOSR-JBM),* Volume 6, Issue no: 3, page no: 1-11. Retrieved from http://www.iosrjournals.org
  - Joshi and Ashish B (2010), "A Study on Corporate Governance and the Financial Performance of Selected Indian Companies" thesis PhD,

Saurashtra University, Retrieved from http://etheses.saurashtrauniversity.edu/id/eprint/101

- Nidhi Tyagi, Mohd. Atif and Yustra Naseem (2013), "Corporate Governance Practices in India: A Comparative Study of Selected Banks". *International Journal's Research Journal of Social Science and Management,* Volume 3, Issue no: 08, Page no: 175-184. Retrieved from http://www.theinternationaljournal.org>RJSSM
- Poonam Rajharia and Dr. Bhawana Sharma (2014), "Corporate Governance in India Evolution, Issues and Challenges for the Future". *International Journal of Scientific Management and Research*, Volume 2, Issue no: 12, Page no: 1815-1824. Retrieved from http://www.ijsrm.in
- Rajesh Chakrabarti, "Corporate Governance in India- Evolution and Changes" College of Management, Atlanta GA 30332, USA, Retrieved from http://rajesh.chakrabarti@mgt.gatech.edu
- Shaily Rani and Pandey. V.K. (2015), "Trends of Corporate Governance". *International Journal of Engineering and Management Sciences*, Volume 6, Issue no: 2, Page no: 155-157. Retrieved from http://www.scienceandnature.org
- Taruna and Arpit Shailesh (2015), "A Study on Corporate Governance Practices in India". *International Journal of Applied Research*, Volume 1, Issue no: 9, Page no: 815-82. Retrieved from http://www.allresearchjournal.com

➢ **Websites**

- https://www.dabur.com/in/en-us/investor/financial-information/reports/annual-reports
- https://www.itcportal.com>about-itc
- https://www.hul.co,in.images>investor-relations
- https://www.britannia.co.in>pdfs>annual_report
- https://www.marico.com>investorspdf>Annual-Report
- https://www.jyothylaboratories.com
- https://www.sebi.gov.in>attachdocs

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CYBER SECURITY FRAMEWORKS FOR THE DIGITAL AGE

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Abstract

In the digital age of today, cyber security is more important than ever. With more and more users joining social networking platforms and using cloud computing services to store their personal information and confidential files, attackers are devising sophisticated strategies such as malware and ransomware to compromise the integrity of computer networks and systems. This assessment traces the origins of cyber security as a concept, documents its evolution and explores the modern trends that are associated with it. Moreover, it also discusses the facet of cyber security for home and office users and defines the strategies that they can employ for making their digital life safe and secure.

Keywords: *Cyber security framework, cyber security awareness, cyber security companies, cyber security news.*

1. Introduction

The unparalleled reign of all things 'virtual' has surpassed the expectations of many. From social media, cloud computing to artificial intelligence, all of us are exhibiting a growing preference to live the digital life which somehow seems more intriguing or enchanting and less complicated. In essence, there is nothing inherently wrong with having this wish. The online community of today has reached a colossal size where interconnectedness between humans has led to the elimination of geographical boundaries and limitations of time.

According to an estimate presented by United Nations, the number of global internet users surpassed 3 billion people as of 2015 [1] of which one-third are a part of the popular social networking platform, Facebook. Moreover, photo sharing application, Instagram which is arguably one of the most trendy social media services amongst youngsters, boasts of a user base of 800 million individuals and businesses [2]. Accordingly, Google's flagship cloud storage service, Google Drive has staggering 1 billion users worldwide and stores an astounding 2 trillion files on its servers [3].

So what is the bottom-line of it all? The sheer scale of the virtual arena has expanded to a point where it has transformed into the nerve center of user information. The presence of sensitive and private data on the internet makes it the ideal hunting ground for preying cyber criminals to find their next unknowing target. How can users escape from the clutches of modern day criminal masterminds? The answer to this question lies within the comprehensive cyber security frameworks and their effective application to help organizations and individuals combat the menace of cybercrimes.

2. Materials and Methods

The assessment which has been conducted in this article has employed the findings of secondary sources and scholarly articles related to the subject. Cyber security covers a range of mechanisms, tools, technologies and systems that are developed to safeguard computer infrastructures, sensitive data and networks from impending attacks by hackers and offenders that have malicious intents. Tracing back the origins of cyber security, it can be noted that the concept first emerged in the academic arena, when a researcher by the name of Bob Thomas discovered the possibility for a computer program to travel across a network and leave behind a shadow of its path. This finding led to the birth of 'Creeper', the world's first computer worm that had the ability to duplicate itself on several computers [4].

As the arch nemesis of the Creeper, Ray Tomlinson or the 'father of the e-mail' created 'The Reaper' which was a software that could also make its way to the computer systems, detect the presence of 'Creeper' and effectively remove it from the network, for good. 'The Reaper' embodies the first every cyber security framework to have been established by researchers in an attempt to thwart off the dangers posed by a virus.

This began in the late 1970s when the threat of cyber-crimes was low to the point of being inexistent, only to pick up massive pace in the mid-1980s when an unexpected attack on the Pentagon's computer networks shook the United States government. The architect behind this attack was Markus Hass who became the first ever perpetrator to actively use his cyber prowess for advancing a political agenda.

Since then a range of computer viruses have pestered users across the globe in unimaginable and even creative ways. From the infamous Anna Kournikova virus launched in 2001 that enticed individuals to click on it by using pictures of ravishing tennis stars to break into their Outlook contact list, the Koobface virus of 2008 that more specifically targeted users of social networking websites and the more recent Backoff malware which was intended to hack into POS systems for unlawfully securing consumers' credit card information. Just as the execution of cyber-crimes has become more sophisticated in recent years, the weapons needed by users and enterprises to fortify their cyber warfare arsenal also need to become stronger.

3. Results and Discussion

Since the inception of the first anti-virus enterprise in 1987, cyber security companies have completely changed the dynamics of the industry. Moreover, the latest innovations in the field merge advancements in machine learning to help devise cyber security frameworks related to home privacy and regulating online content for children.

3.1 Deep Learning and Artificial Intelligence (AI)

Data analytics is the rage in 2018. Unlocking the trends and patterns indicated by the abundance of information help predict behaviour and upcoming activities as well but how can this innovation be applied to the combat online crimes? Well, cyber security companies have come to the valid realization that if AI models are made to face the right information, then they can detect inconsistent or irregular behaviours across networks which are essentially a representation of impending security threats. The most standout aspect about this trend is that AI frameworks do not require any human guidance to counter cyber threats but have the unmatched capability of creating their own solutions for averting potential attacks [5].

The spread of this cyber security news has come across as an exciting message for industry analysts and gurus that are looking forward to the possibilities that it can bring with itself. Moreover, the efficacy of this innovation can prove to be even more fruitful in large-scale enterprise and governmental settings where the wealth of personal files and records are at a much greater risk of falling prey to hacking attempts.

3.2 Early Detection and Warning Systems

Warding off an incoming cyber-attack before it happens is better than countering it when it has crept within the computer networks and its broader systems. The development of early detection and warning systems is a fairly new development with reference to cyber security frameworks but is progressing rapidly, given the incomparable benefits that it can offer to sectors such as banking and defence.

Renowned cyber security companies have already shared their prototypes which have been developed to eradicate the onset of what are known as 'fileless attacks'. However, early detection and warning systems are capable of detecting traffic patterns and decoding meta-data to rate platforms and networks that have a much higher chance of being subjected to an attack. The delivery of this notification, allows enterprises to prepare for the looming threat or strengthen their current capabilities to successfully eliminate their emergence.

The foundation of these systems however, lies in the development of effective algorithms which have the capability to make use of characteristics such as webpage and file system structures to help companies detect where their shortcomings are present. In more ways than one, these systems can also play the role of evaluating current cyber security frameworks that a company has in place and helping them transition towards platforms that are far more effective and competent at their job. Moreover, network traffic analysis (NAS) solutions are a part of this technology [6].

3.3 Central Cloud Portals and Boundless IT Services

The functionalities and capabilities of central cloud portals can be assimilated with early detection and warning systems to create a fool-proof cyber security framework. The premise of this argument is based on the view that through the integration of cloud technologies, IT teams that are based in any part of the world can deploy mechanisms for

countering an attack as soon as it seeps within the network. The notion of boundless IT services with the support of central cloud portals makes it viable for IT personnel to guide their systems no matter where they are present. Accordingly, this development also carves a pathway for traditional techniques of cyber security to take a backseat. Therefore, tools such as firewalls and prevention systems are expected to be replaced by the emergence of virtual firewalls whose engine is cloud technology. The best about this innovation is that it is very much a reality of today, data center security services provided by leading companies such as Amazon are a testament of this advancement.

3.4 Cyber Security for Home and Office Users

Cyber security should not have to be a complex conundrum. In fact, it is imperative for average home and officers users to have an idea about protecting their own information and ensuring that their personal data is not handed over to criminals which will ultimately use it for malicious purposes. If you think about it, cyber security awareness is no less than a life skill in the digital age of today. To guarantee that you never become a victim of the criminals lurking the web, here's what you should never do.

3.5 Avoid Opening Links from Untrustworthy Sources

Sometimes users receive emails from organization that seem legitimate and provide lucrative offers such as a chance to travel the world or handing out job vacancies. Regardless of how enticing or real an email looks, users should never open links provided by sources that are unverifiable. In most cases these are elaborate scams which have been designed to steal personal information.

3.6 Update Your Arsenal

Users often come across with those software notifications asking them to update to the latest version, however, most individuals tend to avoid these messages until the very last day but it is important to understand that complying with them is very beneficial. These updates enhance the ability of anti-virus software and similar platforms to deal with the most sophisticated malware and spam on the market.

3.7 Know the Risks

Having sufficient cyber security awareness is fundamental. On an enterprise level, organizations have a number of mechanisms to make sure that their employees are prepared to combat any cyber threats, from hands-on induction training, drills to periodic training sessions [7]. Nonetheless, home users should also become more mindful of these possibilities and take out the time to educate themselves about cyber security. From MOOCs to free online courses and one-step guides there are a number of free resources that can be used to gain insight on the subject matter.

4. Conclusion

In the current scenario, cyber security frameworks are an undeniable necessity for internet users. Keeping with the latest cyber security news will inform users about the emerging threats across the web and how it has become more important than ever to understand how they affect them and their families. Being well-prepared and taking the essential preventive measures to avert these attacks is critical to secure personal data and have an internet experience where none of your information is compromised or left out in the open for attackers to use.

With each passing day, the nature of cyber-crime continues to evolve and become more sophisticated, this is why, it is important to remain two steps ahead of those who are responsible for these crimes.

References

1. J. Davidson, (2015). Here's How Many Internet Users There Are. *TIME*. Retrieved July, 2018, from http://time.com/money/3896219/internet-users-worldwide/ Facebook. (2018). Stats. *Facebook Newsroom*. Retrieved 2018, from https:// newsroom.fb.com/ company-info/
2. A. Balakrishnan and J. Boorstin, (2017, September). Instagram says it now has 800 million users, up 100 million since April. *CNBC*. Retrieved July, 2018, from https://www.cnbc.com/2017/09/25/how-many-users-does-instagram-have-now-800-million.html

3. R. Price, (2017, May). Google Drive now hosts more than 2 trillion files. *Business Insider*. Retrieved July, 2018, from http://uk.businessinsider.com/2-trillion-files-google-drive-exec-prabhakar-raghavan-2017-5
4. T. M. Chen and , J. M. Robert (2004), The evolution of viruses and worms. *Statistical methods in computer security*, *1*.
5. S. Russell, D. Dewey and M. Tegmark (2015), Research priorities for robust and beneficial artificial intelligence. *Ai Magazine*, *36*(4), 105-114.
6. W. Wang and Z. Lu (2013), Cyber security in the smart grid: Survey and challenges. *Computer Networks*, *57*(5), 1344-1371.
7. C. Willems and C. Meinel (2012, April), Online assessment for hands-on cyber security training in a virtual lab. In *Global Engineering Education Conference (EDUCON), 2012 IEEE* (pp. 1-10). IEEE.

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Disguised politics and the Politics of resurrection in Perumal Murugan's *Poonachi*

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Abstract

The article attempts to analyse Perumal Murugan's work Poonachi. It is the first fictional work he published after his self imposed exile. This paper tries to find out the hidden politics and the antidemocratic ways of the government in this rural story. The work also tries to reveal how Perumal Murugan resurrects as a writer after the controversies related to his work One Part Woman.

Keywords: *Surveillance, Resurrection, Coma population, Ordinariness, Spatiality.*

Madhorubhagan, Perumal Murugan's controversial book published in 2010. The translated version *One Part Woman* came in 2013. Only in 2014 it attracted the attention of the hindutva leaders and right wing politicians. They protested against the old tradition of consensual sex outside marriage in the novel. They argued that the novel hurt the sentiments of the Gounder caste. During the controversy and agitation announcing his literary suicide he wrote on his Face book page "Perumal Murugan the writer is dead. As he is no God, he is not going to resurrect himself. He has no faith in rebirth. As an ordinary teacher, he will live as P.Murugan. Leave him alone." He had to leave his home town and live in Chennai as a refugee for many months. Because of the caste politics and vote bank the state government didn't come to his rescue. But later Madras High Court in its judgement to uphold the freedom of expression, speech and writing had declared that there was nothing obscene in his novel. In the concluding judgement the court commented "Let the author be

resurrected to what he is best at. Write." This concluding sentence was a revelation to the writer and he began to write with new josh. In one of his interviews he says he don't want to comment on the controversy. "I am not defined by controversy; I am defined by my writing."

Poonachi or The story of a Black goat (2016) is undoubtedly the resurrection of the Perumal Murugan after his self imposed exile in connection with the problems related to his novel One Part Women. Even though he called himself a "Coward" (*Songs of a Coward*) throughout his work one can see how relentlessly PM disguises his political views inside the goat saga. His cowardice itself shows his very nature to rebel. "A coward joins no political party, abides by no ideology and is loyal to no leader..." *Poonachi* is a political saga as his many other works are and it goes beyond the political correctness. Sarcastic tone of the preface itself leads the readers to the memories of the history of the novelist. How the right wing terrorised the author and how the author was mercilessly attacked by the hooligans.

How far a creative writer can express his thoughts on the religious matters? To what extent a writer can depend on the oral tradition and folklore? These were the most significant questions before Perumal Murugan when he began to write again and *Poonachi* is an answer to those. *Poonachi* is his first fictional work after the controversy. The most significant thing in his writing is that he is very much conscious in selecting the plot and the execution of his art. There is a deliberate effort to keep distance from all those things which might create any type of headlines for the very wrong reasons.

Poonachi like George Orwell's *Animal Farm* and the *Aesop tales* is a well-crafted work incorporating the animal world. How the so called democracy in our country mocks the common people and in what all ways these people are being looted by the government itself can be seen in this. His nature of rebellion is well portrayed through the goats. In the preface he states that goats are full of energy and he finds a scope of narration in them. The confrontation of the right wing politics through the

story of a black goat itself is a choice of brilliance. The black colour of Poonachi becomes a major issue when the ear piercing time came. “Since they could not be recognised in the dark when engaged in any criminal activity, the regime had, it was rumoured, deliberately wiped them out”.

After his self impose exile he somehow found a fondness for the ordinary. This ‘ordinariness’ is the significant area of his resurrection. From the multitude he purposefully chooses the very ordinary characters and plot for *Poonachi.* In *The Poems of exile* and *Poonachi* one can find this expressive nature of ordinary lives. He chooses to narrate the story of the ordinary,that is how the novel begins. There won’t be any trace of the ordinary. He states that ordinary life never leaves any trace. From the very ordinary Perumal Murugan pictures a saga. The protagonist is a farmer from the community of Asuras. He got Poonachi from Bakasura who told the old man that “she came from a line that can deliver a litter of seven”. Seeing Poonachi’s fragile body nobody believed it. Survival also holds a major part in this. The ordinary people strive for survival. The change in the climate and the occasional visit of the rain makes water a precious thing. How the common people strive for the survival and instead of helping them how the government treat the fear stuck farmers and impose more burden to them is also well portrayed in this. There is a paradigm shift from a larger canvas of reviving the age old folklore tradition and ritualistic spectacles to the very ordinary rural life of the animal world.

Throughout the novel he constantly reminds us that there is a space for the ordinary people in this world. The nuance of the village life affected by the drought and the struggle of ordinary people with nature and with their own self is picturised by the author. He reminds us about the rights of the citizens. Those ‘rights' everyone in this country have; Right to live with dignity. In his works the fundamentals of the life itself is being celebrated. The essence of the rural life, the rapport between the humans and animals, the love and care of the common people the inability of the farmers to lead a normal life all come under the review of this writer.

The spatiality in *Poonachi* is that of a village. It is not the grandeur and pompous lives of the valorous people but of the common lives he chooses. As in his many other writings in this piece of writing also he reminds us that there is a space for the ordinary people and the agonies of their daily routine. There is nothing romantic or great in their lives but still the setting of the rural village and those people are a part of a larger trajectory. The journey of the old couples to their daughter's village gives the narration an additional charm. It's only then Poonachi gets a chance to explore new geographical areas and the experience of entering into a forest and loneliness she felt without her herd.

Perumal Murugan juxtaposes the sheep and goats in this work. Sheep is always submissive they never instigate any trouble. But in the case of goats they are full of energy and are trouble to their masters by violating the unwritten laws in the pasture fields. He wonderfully depicts the subtle nature of these animals. Goats are rebellious in nature. Murugan's selection of the goats as the lead character itself is because of this rebellious nature. Goats always try to break the rope. The author himself shows this rebellious nature in many of his writings. "They always stood with their heads high. Goats never enjoy being in shackles. But sheep will never make an effort to free themselves. None of the sheep had their neck and forelegs bound together with a rope. That was only done to proud goats, who were forced to look at the ground as they walk". Sheep are ever free, because they never show any rebellious nature. Murugan comment on this "If it was in your nature to bow down, why would anyone shackle you". And he continues "They had no inkling that to bow was to be shackled".

In *Peril* Morrison says "Writers – journalists, essayists, bloggers, poets, playwrights – can disturb the social oppression that functions like coma on the population, a coma despots call peace; and they stanch the blood flow of war that hawks and profiteers thrill to". Sheep in Poonachi is the representation of this "coma population", those who are eternally passive in nature and are ever reluctant to stand

up and fight for their rights. In our society those who shows the nature of rebellion and try to speak or act against the regime is silenced. They are attacked or kept behind the prison bars. The regime tries to wash out those who are rebellious. Those who simply obey commands without any hesitation will get their share. Poonachi always dislike the lambs because of their ever bowing nature. They always had their heads down. Most of us are like the lambs always reluctant to stand against the authority we simply bow down to the system and try to follow others.

Somewhere in life every one of us might have experienced how to behave in a queue or rather how to wait patiently in a queue and what others are expecting from us when we are in a queue. It might be a queue in a cinema hall, supermarket or in religious centres. It can be seen as a disciplined way of dealing things. In our educational system itself the queue is important. In the assembly students are required to line up in the queue according to their heights. For instance, in the novel the people opines about the 'queue'. Why the queue is important, why the regime is keen on to participate the common people in this activity. They find interesting queries. Some says "Queue will make us patient" another one commented that "Queue will make us tolerant". Common people are expected to be disciplined and obedient. Queue is a major tool of the regime to make their subjects submissive. When you are patiently waiting for something in a queue you are following certain rules. You are trained to be patient and tolerant obviously. You are already showing you submissiveness to the authority. You think that it is a fair system, a democratic system which is there for your own good.

Ours is considered as the largest democratic country. Through this work the writer sarcastically commented on the 'democratic' ways of our system. How the officials treat the ordinary farmers and in what all ways the speculation about the regime is spread. How the fear works as an oppressive mechanism in the regiment. Lines are part of democracy those who come first should be served first. But how the regime manipulates it and how these lines become part of degrading the common

people is well manifested in the work. Cutting in line is wrong whether it is done by a common man or someone who possessed wealth. Here only those who are underprivileged are forced to stand in the queue, under the blistering sun to get sanction from the officials. Those who have money and possess hundreds of goats did never come to the doors of the officials. The officials themselves went to their farm and gave sanctions and the ear piercing of those goats are also done by the officials. They humbly accept bribe from those landlords.

What makes some people privileged in a democratic society? Is it the caste, education or the wealth one possess? The plight of the underprivileged is well pictured in this work, where a lot of common people come to the regime and they waited for so long under the sun that many of them fainted and are taken to the shades by others. Even then the officials show no mercy they came out and threaten the poor farmers. The voice and choice of the common people is very much limited. They don't even protest against the bureaucrats. They are in constant fear. The rights of the citizens are unheard in the village. This constantly reminds us about the urgency of the establishment of better opportunities for the rural people to get education.

It is a fable of the fragile lot. Poonachi herself is very much weak as compared to other goats in the herd. Even though it is expected from the beginning that this goat will litter seven in a line but no one believes it. Seeing her one would barely think that she would ever give birth to at least one. Her masters the old couples are also very weak and old. Perumal Murugan's purposefully chose these fragile beings against the very energetic Uduman, Oothan and Kaduvayan . When Kaduvayan shows the urge to have sex with female goats in the pasture fields the old man decides him to get castrated. How humans are controlling the sexuality of the animals also discussed. After castrating Kaduvayan and Peethan the boatman says "My sin is bigger than the sin of homicide". We can feel the helplessness of a man in his words. He also cries by saying "Sinner. I am a sinner and a wretch". The pain of Kaduvayan is unbearable. Throughout the novel we can see the double role of the humans as the hunter as well

as the protectors. The same people who gave food and care for the herd will castrate them or kill them. Poonachi is always confused with this nature of protection and killings. The same old woman who fed her and always protected her from all harm curses her and sell her kids to the butcher.

It is compulsory for all the children and domestic animals to get their ears pierced. "After registering the details of name, age and address the government would organise the ear piercing". It also reminds the readers about the Adhar card and the issues related to the privacy. The regime is like the 'Big Boss' who watches everything, it is omnipresent and omnipotent. The people have to take their children as well as domestic animals to the office to get their ear pierced. They should also register the details of name, age and address to the authorities. The officers are very keen on this process. As Foucault remarks in Discipline and Punishment "Surveillance is permanent in its effects, even if it is discontinuous in its action". Nothing can escape them.

It is an artistic venture against the regime. How the authoritarian society and the government insist the ordinary lot to suffer and make them to bow down before the people in governance. The system and the machinery structure are insensitive and deaf to the problems of the common people. They infiltrate terror into the ordinary humans. The ignorance and illiteracy of these people are well manipulated by the people in power. Common people are always afraid of the authorities. They say that the regime has ears on all sides. "There is an old saying that the regime is deaf. It's deaf only when we speak about our problems. When we talk about the regime, its ears are quite sharp". How the governments curtailed individual freedom and privacy is also sarcastically pictured by the author. He states "These days, even if you fart, you have to register with the government".

In *Poonachi* he disguises his political views and his democratic stands. By placing the major plot revolving around the animal world the author carefully woven the fabric of his own politics inside the work. Meesagaran is the only God reference

in *Poonachi* and the festivities and ritual portrayals compared to his early works is less visible in this. In *One part woman* the main plot itself is related to the ritual, but in the preface of *Poonachi* the author states it clear that now he is in a state that he had grown fearful of writing about humans, even more fearful of writing about gods. There is only minor interference of gods in *Poonachi* compared to his earlier works. But still *Poonachi* is an answer to those who believe in democracy, freedom of speech and expression because it gives answers to some fundamentals of being a creative writer. He resurrects.

Bibliography

1. Bhatia, Gautham. *The Fault in our Speech*. The Hindu, July 07, 2016. Web.
2. Foucault, Michel. *Discipline And Punish: The Birth of the Prison*. Pantheon Books, New York, 1977. Print.
3. Morrison, Toni. "Peril" *Burn This Book: Pen writes speak out on the power of the word*. *Harperstudio*, New York, 2009. Print.
4. Murugan, Perumal. *Poonachi or The story of a black goat.* Tr. Raman,
5. Kalyan. Westland , Chennai, 2016. Print.
6. Murugan, Perumal. *Songs of a Coward: Poems of Exile*. Tr. Vasudevan,
7. Anirudhan. Penguin Books, India, 2017. Print.
8. Murugan, Perumal. *One Part Woman*. Tr. Vasudevan, Anirudhan. Penguin Books, 2014. Print.

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THE PORTRAYAL OF DISABILITY IN INDIAN CINEMA

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Abstract:

Art and life have always had a mutually borrowed existence. So has cinema and society and conceptions of disability are no excuse to this phenomenon. This paper is an attempt to trace the themes with which disability has been portrayed in Indian Cinema (Hindi, Malayalam, Tamil and Telugu) from the early 1990s to the present. It is acknowledged that this analysis is limited to the movies the author has been subjected to hitherto.

Keywords: *Cinema, Disability, Redemption, Punitive, Mythology, Disequilibrium, Caricature, Differently-abled, Details, Lived experience, Emotions.*

The 2009 Bollywood movie *Lafangey Parindey* is the life of a dancer who loses her sight before a major performance. She is brought back to vigour by the thug who is responsible for her loss. He convinces her that by honing her listening skills she could make her disability into nothing and achieve her dreams. The movie wipes out all the other possibilities but the will of the individual to overcome any disability and this path here has to be shown to 'a weak woman by an enlightened man'.[1] Here is also the idea of serving the disabled as a way of

[1] http://www.phalanx.in/pages/article_i009_Portrayal_Disability_Indian_Cinema.html

redemption which appeared in many older movies like Mera Dost Mera Dushman (1984) where the transformation of a dacoit comes from having to live with a blind woman and Dushman (1971) where an alcoholic is reformed after having to pose as a blind woman's son.

Disability as an enduring punishment or as being punitive is a recurrent theme in Indian cinema. In *Mehboob Ki mehendi* (1971), *Sholay* (1975) and *Roudram* (2011) the theme of disability becoming a bigger punishment than death is conveyed. The protagonists in the movie decide to amputate their enemies than killing them because disability serves as a lifetime punishment unlike death which does not last. Thus what is being articulated is that disability is a greater torture than death itself. In *Jeevan Naiya* (1936) the protagonist who abandons his wife for having ignoble parents loses his sight and is eventually taken care of by his own abandoned wife thus setting him at the same level as his wife. *Koshish* (1971) turns its antagonist blind for his ruthless actions whereas the Tamil movie *Netrikkan* (1979) turns its protagonist onto a wheelchair for being lascivious (he is thus also desexualised). The drug addict in *Jalte Badan* (1973), the evil father in law in *Aadmi* (1968) and the proud rich arrogant atheist of *Dhanwaan* (1981) are turned blind. *Kasam* (1988) punishes the chieftain who heads a village of criminals by disabling him. In the 1954 Tamil film *Ratha Kaneer*, the protagonist becomes a leper for flagging western ideals like promiscuity, alcoholism, hatred for traditional values etc. In all these films either tolerance of disability is portrayed as a purifying path to enlightenment from days of sin or is showcased as a punishment for cruelty depicted earlier in life. Gandhari from Mahabharata is the epitome of the former theme since she raises from being a mere human being to a God after she blind folds herself as an act of ultimate Sati to her blind husband Dritarashtra. A similar scene of self-giving is acted out by the heroine in 1965 film *Arzoo* when she places her own foot on a chainsaw in an attempt to equal her amputated husband.

The idea of punitive disability has its roots in Indian mythology in the stories of Shurpanaka; Ravana's sister; who is reborn as a hunchback for her vanity and lust, Ajamukhi who is a Brahmin's wife cursed for her lust by sage Durvasa, Ashtavakra (meaning eight deformities) who is punished for filial impiety of correcting his father before he was even born. Disability as a derivative punishment is depicted in the story of Ambika's repulsion to sage Vyasa's looks. She closes her eyes during their intercourse resulting in their son Dritarasthra's blindness. In *Moondru Mudich* (1976) the protagonist proud of her looks is disfigured in a fire and in *Arangetram* (1973) the prostitute becomes insane.

Though attempts have been made to show how disabled can live independently through films like *Athmakatha* (2010) where the blind protagonist lives peacefully with his life, films like the 1964 *Dosti* portray the dangers lurking everywhere in the daily existence of a disabled if without someone to depend on. IN 1972 the film Koshish portrayed disabled leads whose infant dies because they could not hear it cry and whose brother cheats and steals money from them picturing them as helpless and kind-hearted unfortunates further underlining the dependency factor of disability. In 1996 malayalam film *Ee puzhayum kadann* the heroin's deaf and dumb sister is married to a man who is not so owing to the dependency that follows disability.

Portraying disability as disequilibrium is also a common practice in Indian cinema. It is something that can be cured; that will go away. In 1995 Malayalam film *Mazhayethum Munpe* , Uma, a dancer, suffers from stroke which they continuously strive to overcome. Their efforts are shown in a manner of bringing her back to life, to get back the fuller version in her.

The mythical stories of the hunchback Manthara who manipulates Kaikeyi to sent Rama on exile and the crippled uncle Shakuni who causes the war between the Kauravas and the Pandavas render yet another angle to the perception of

disability. They are social maladjustments who are the cause of evil in both the stories. Similarly is 2013 malayalam movie *Memories* where the antagonist has a limp and is a murderer who takes revenge on a few women who troubled his life before. Also in 2015 telugu epic film *Baahubali* , Bijjaladeva (father of the antagonist) is the one who inflicts all the evil into his son in revenge for losing the kingdom to his brother owing to his disability.

The act of sentimentalising disability is prevalent in Indian cinema ranging from the 1998 malayalam film *Punjabi House*, 1999 film *Vansanthiyum Lakshmiyum pinne Njanum,* 2002 film *Uma Penninu Uriyaada Payyan* to 2004 Tamil movie *Perazhagan* and 2011 *movie Daiva Thirumagal.*

Bollywood comical dramas like *Golmaal* have shown disability a mockery. However others like *Guzaarish* evoke a sense of utter pity towards the disabled hero who is constantly at wars with the court for his euthanasia. He himself has denied his existence. The female finally helps him poison himself and redeem his soul from all the pain and human-less existence.

Malayalam cinema like *Naghakshathangal, Meerayude Dukhavum Muthuvinte Swapnavum* and *Kalyanaraaman* portrays its heroine or atleast of its lead ladies disabled. Through the film we see the characters almost demanding pity and remain helpless. The feeling of something missing in them and thus incomplete is projected. *Sargam* portrays its female lead becoming disabled as if a punitive act or redemption for her crimes. She is lifted of the curse once her man returns and they finally are together again.

The Malayalam movie *Beautiful* is one of the very few movies that tell us of the way the life of a disabled is to be lived. The male lead is bedridden and has a female nurse and a friend who constantly visits him. The man does not seem to be in despair. He has accepted his state and remains open and strong towards whatever is to come. The film shows us his daily routines, the way he is nursed

etc. He constantly talks his emotions to his friend. Finally we see him motivating his friend after a heartbreak. At this juncture we wonder who the stronger man is. The Malayalam movie *Artist* however showcases a different angle to the disability acquired by its male lead. He pursues his painting careers after the blindness and in fact attains fame then. He is shown as a man steadfast in his vision and determined to move forward. It also closely shows us the frustrations associated with acquired disability- for the disabled and his family. In this context it is a new road in Malayalam cinema in dealing with disability. Rather than just brushing off the disability, it has now started to delve deep into the way it is experienced and felt, the emotions associated with it and the influence it has on others.

Conclusion:

Whereas pre-2000s portrayed disability in the view of creating a caricature, it has now started appearing in very different contexts altogether, opening up the space for more discussions and thoughts. Films like Paa (2010), My Name is Khan (2011), Fanaa (2007), Pithamagan (2003), Thanmathra (2005) have won awards for the actors portraying the disabled characters taking disability itself to transform into a space that is being awarded for the talent inherent in it. Disability has started to be 'normalised' is what is a take-away from the movies now. We also see the transformation in the way cinema is also shifting along with the society at large from references like 'disability' to 'differently-abled'. The broader picture towards the future appears welcoming.

References:

1. I am like 'Lafangey Parindey' heroine: Deepika Padukone" Daily Bhaskar, 27 August2010. hp://www.daily.bhaskar.com/arcle/i-am-like-lafangey-parindey-heroine-deepika-padukone-1227747.html
2. Evelyn Mogk, Marja. 2013. *Different Bodies: Essays on Disability in Film and Television.* McFarland & Company, Inc., Publishers, London.
3. *Mohapatra, Atanu. 2012. Portrayal of Disability in Hindi Cinema: A Study of Emerging Trends of Differently-abled.* A Publication of TRANS Asian Research Journals AJMR Asian Journal of Multidimensional Research Vol.1 Issue 7.
4. Boray, Sameer. 2011. *Depiction of Disabilities in Movies: Disability Portrayal in the Media Through the Eyes of Bollywood and Hollywood.* Available at SSRN: https://ssrn.com/abstract=1943108 or http://dx.doi.org/10.2139/ssrn.1943108.
5. Pal, Jyojeet. 2013. *Physical disability in Indian Cinema. From 'Different Bodies: Essays on Disability in Film and Television'.* McFarland & Company, Inc., Publishers, London.

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सारांश

व्यास सम्मान से अलंकृत होनेवाली चंद्रकांता का उपन्यास कथासरीसर कश्मीर के दर्द का दस्तावेज है। इस उपन्यास में लेखिका ने प्राचीन पुराण गाधाओं, आधुनिक कबाइली हमलों, देश विभाजन के कारुण दृश्यों, आतंकवाद और विस्थापित कश्मीरियों के दर्द को अपने सीने में समेट लेती है। प्रस्तुत उपन्यास सन 1931 से लेकर 2000 तक की घटनाओं तथा विस्थापन का तंग झेलनेवाले कश्मीर निवासियों के दर्द का दस्तावेज है। प्रस्तुत उपन्यास में वादी में चौदहवीं सदी में सिकंदर द्वारा जो विस्थापन आतंक मचा गया उसमें विस्थापित पंडितों की सूचना प्राप्त है। आज वही दौर जारी है। लेकिन आज बाहर से आया हुआ नहीं भाई भाई को घर से भगा रहा है। इसका तात्पर्य यह है कि राजनीतिक कारणों से विस्थापन शताब्दियों से चल रहा है। कश्मीर में हिन्दू मुस्लमान लोग आपस में मिलकर रहते थे लेकिन मजहबी सिसायत ने इस सम्बन्ध में फर्क डाल दिया। कश्मीरियत को हिन्दू-मुसलमानों की साँझी विरासत मानती हैं। लेकिन इस्लामीकरण के कारण वादी में विनाशकारी परिस्थितियाँ पैदा कर दी है। जिनके कारण अपने ही घर में कश्मीरी पंडियों को रह पाना असंभव हो जाते हैं। इस पृष्ठभूमि में लेखिका ने कश्मीरी पंडित अजोध्यानाथ के परिवार की तीन पीढ़ियों के वर्णन के साथ मजहबी आतंकवाद से विस्थापित कश्मीरी पंडितों की पीड़ा को 'कथासतीसर' द्वारा प्रस्तुत करती है।

मूल शब्द : विस्थापन, त्रासदी, दस्तावेज, कश्मीर घाटी, मजहबी।

प्रस्तावना

डा एन. मोहनन ने अपने 'समकालीन हिंदी उपन्यास' नामक पुस्तक में विस्थापन की परिभाषा इस प्रकार दी है - ''मनुष्य के अपने जन्मस्थान और निवास स्थान छोड़कर एक नए स्थान की ओर गमन करने की प्रक्रिया को विस्थापन कहा जा सकता है।''[1] उनके अनुसार विस्थापन के कारण अलग-अलग हैं। खुद विस्थापन को स्वीकार करनेवाले लोग हैं तो कुछ लोग मजबूरीवश इसके शिकार बन जाते हैं। आज विकास, आतंकवाद, राजनीती, साम्प्रदायिकता, प्राकृतिक आपदाएँ आदि के कारण लोग विस्थापित होने में मजबूर हो जाते हैं। भारत में राजनीतिक कारणों से उपजे विस्थापन कश्मीर के विभाजन के साथ शुरू हुए। कश्मीरी पंडितों के विस्थापन को लेकर उपन्यास लिखनेवालों में चंद्रकांता को मुख्य स्थान है।

'विस्थापन की त्रासदी का दस्तावेज : कथासतीसर' नाम इस शोधपत्र में द्वितीयक संदर्भों ग्रंथों के द्वारा अध्ययन करने का प्रयास किया गया है। व्यास सम्मान से अलंकृत लेखिका चंद्रकांता जी द्वारा रचित 'कथासतीसर' कश्मीर की पृष्ठभूमि पर आधारित बृहत उपन्यास है। आकार, विचार, विस्तार और विषय की दृष्टि से बृहत प्रस्तुत उपन्यास में लेखिका ने विगत सत्तर वर्ष की अवधि में कश्मीर के सामाजिक, राजनीतिक, धार्मिक, तथा सांस्कृतिक परिवेश में जो परिवर्तन हुआ है जिसका यथार्थ अंकन सहजता से किया है। लेखिका ने अतीत, वर्त्तमान और भविष्य की यात्रा के साथ ही अपनी विरासतों को टटोलने का प्रयास किया है। आतंकवाद आऔर विस्थापन से जर्जर हुई वादी का दुःख लेखिका की निजी कष्ट होते हुए भी पूरे कश्मीरियों की कष्ट गाथा है। प्रस्तुत उपन्यास के आरम्भ में लेखिका लिखती है कि ''यह कथा उन बेघर-बेनाम के नाम, जिन्हें, ग्यारह वर्षों के निष्कासन के बाद भी समझ नहीं आता, कि वे अपने घर क्यो नहीं लौट सकते।''[2]

कभी औरंगज़ेब के समय में कभी अफगान काल में शैव, बौद्ध और इस्लाम की सांझी विरासतों से रची कश्मीर वादी में कई कठिन दौर आ चुके हैं। लेकिन ललद्यत और नुंद ऋषि की धरती पर भिन्न धर्मों के लोग आपसी सौहार्द और समन्वय से जीते रहे। चौदहवीं सदी में सुल्तान सिकंदर ने आतंक, हत्या और निष्कासन का दौर चलाकर कश्मीर की ऋषि भूमि को उजाड़ दिया और बुतशिकन कहलाया। तब वादी में पंडितों के कुल ग्यारह गृह बच गए थे। लेकिन उसी के बेटे सुल्तान जैनुलाबद्दीन ने निष्कासित पंडितों को ससम्मान घर लौटाया, पद-प्रतिष्ठा दी और सांप्रदायिक सद्भाव की मिसालें कायम की और 'बडशाह' कहलाया। कथासतीसर की भूमिका में लेखिका कहती है कि यों कश्मीर का इतिहास सदियों से आक्रमणों, षडयंत्रों, अत्याचार-आतंक और निष्कासन के हादसों से अटा पड़ा है। विन्सेंट ए. स्मिथ ने ठीक ही कहा था कि ''विश्व में कुछ क्षेत्र ही शायद, शासन के विषय में, कश्मीर से अभागे हों, इतिहास यहां बार-बार लौटता रहा है। महाभारत काल से बीस वर्ष पूर्व, गोनंद राजा के शासन काल से लेकर इक्कीसवीं सदी के इस आरम्भिक दौर तक देखिए, तो यकीन हो जायेगा कि कश्मीर का इतिहास पुनरावृत्तियों का इतिहास है। यह सच जहां आशचर्य और दुःख का भाव जगाता है, वहीं, मन के किसी अदीठ कोने में उम्मीद की किरण भी।''[3] चंद्रकांता जी सूचित करना चाहती है कि बाह्य षड्यंत्र, भीतरी अव्यवस्था, गलत रणनीतियां और शासकों की महत्वाकांक्षाएँ जिन्हें रोका जा सकता था, पर रोका न गया। इस उपन्यास का नाम

कथासतीसार क्यों चुना? इस पर स्वयं लेखिका कहती है कि - ''मुझे तो लगता है, हमारा इतिहास बार बार नेपथ्य से झांकता हमारे पास लौटता रहा है। तभी तो आज सतीसर में जलोद्भव राक्षस दोबारा आतंक मचा रहा है, भले नई शक्लों में। मन्वन्तरों पूर्व नाग पिता कश्यप ऋषि के प्रयासों से, सतीसर प्रदेशवादी आतंकमुक्त हो गए थे। आज क्या कोई कश्यप, कोई 'बडशाह' इक्कीसवीं सदी के इस दौर में जन्म लेगा जो वादी की मुक्ति का कारण बनेगा।''[4] चंद्रकांता ने उपन्यास में तथ्यों का यथार्थपूर्ण चित्रण केलिए 18 ग्रंथों का अध्ययन किया है। जिसका जिक्र उन्होंने रचना के प्रारम्भ में किया है। जिसमें से प्रमुख है - नीलमत पुराण, कल्हण - राजतरंगिणी, डिस्कवरी ऑफ़ इंडिया, क्राइसिस इन कश्मीर, द कश्मीरी पंडित आदि। लेखिका द्वारा इन पुस्तकों का अध्ययन इस बात का सबूत है कि प्रस्तुत उपन्यास सिर्फ कल्पना पर आधारित न होकर तथ्य सत्यों पर आधारित है।

कश्मीर और कश्मीरियत को प्राणवायु बनाकर चंद्रकांता ने 'कथासतीसर' की रचना की। उन्होंने महसूस किया है कि एक सच्चे साहित्यकार मानवीय यातना को अनदेखा नहीं कर सकते। इसलिए उन्होंने समय के सच को साहित्य में दर्ज करना चाहती है, इतिहास में नहीं। क्योंकि उनके अनुसार इसमें मनुष्य और उसकी यातना केंद्र में है, राजनीति नहीं। उपन्यास में लेखिका ने अजोध्यानाथ वकील और उनके संयुक्त परिवार के माध्यम से आतंकवाद और विस्थापन के दुष्परिणामों का दर्दभरा चित्रण किया गगया है। आतंकी घटनाओं के माध्यम से उन्होंने अन्य कथाओं का भी तना-बाना बुना गया है। 13 जुलाई 1931 का दिन आतंक का साया लेकर आया जब अब्दुल कादर पठान ने भड़काऊ भाषण दिया। जिसके परिणाम स्वरूप मजहबी दंगे भड़के और चारों और दहशत का वातावरण बन गया। गैर मुस्लिम लोगों के घर जला दिए गए, दुकानों लूटीं। शासकों के द्वारा हुई इस घटना से भाई भाई का दुश्मन बन गया। इसके परिणाम स्वरूप वादी में दंगे और आतंकवादियों की नींव मज़बूत हो गये। दूध और शक्कर की तरह मिल-जुलकर रहते हिन्दू मुस्लमान भाईयों के बीच अदृश्य दीवारें खड़ी हो गयीं। घाटी में 'मुस्लिम कांफ्रेंस' का गठन हुआ। 1942 में जिन्ना साहब कश्मीर आये तो उन्होंने 'मुस्लिम कांफ्रेंस' की सभा में भाषण दिया - ''भाइयों, मुसलमानों का एक मंच है, एक खुदा, एक कलमा। सभी इस झंडे के नीचे आकर अपने हकों के लिए लड़ें।''[5] गांधीजी और नेहरू ने जिन्ना साहब से मिलकर मुस्लिम लीग और कांग्रेस की समस्यायें मिल बैठकर आपस में सुलझाने की पेशकश की। लेकिन जिन्ना साहब तो द्विराष्ट्र नीति पर अड़े रहे। उन्होंने कहा कांग्रेस को हिन्दुओं और लीग को मुसलमानों की संस्था मानो तभी बात होगी। जिन्ना साहब की जिद्द ने 15 अगस्त 1947 को देश दो टुकड़ों में बंट गया - भारत और पाकिस्तान। दोनों तरफ मारकाट, लूट, आगजनी शुरू हो गयी। ''सुना है अमृतसर - लाहौर से लाशों से पटी रेलगाडियां दिल्ली आ रही हैं और दिल्ली से कटी-पिटी लाशें जवाब में पार्सल की जा रही हैं। ठट्ठ के ठट्ठ लोग पोटली-बुगचे उठाये रातों-रात घर बार छोडकर भाग निकले हैं। हे राम, कैसी आज़ादी मिली।''[6]

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लेखिका के इन शब्दों में विस्थापन की भयानकता हम देख चुके है - ''एक बार पशुओं से भी बदतर जीवन जीते, केम्पों, दड़बों में रहते-सड़ते विस्थापितों से पूछो, कि घर छूटना कैसा होता है? बीमारियों, अपमानों और मनोरोगों के बीच जीते, उन स्वाभिमानी लोगों से पूछो, लू के थपेड़ों, बिच्छू-सांपों के बीच जीते लोगों से पूछो, उन्हें अपने उम्रों के घरौंदे छोड़ने पर मजबूर क्यों हगया है। आतंकी घटनाओं के माध्यम से उन्होंने अन्य कथाओं का भी तना-बाना बुना गया है। 13 जुलाई 1931 का दिन आतंक का साया लेकर आया जब अब्दुल कादर पठान ने भड़काऊ भाषण दिया। जिसके परिणाम स्वरूप मजहबी दंगे भड़के और चारों और दहशत का वातावरण बन गया। गैर मुस्लिम लोगों के घर जला दिए गए, दुकानों लूटीं। शासकों के द्वारा हुई इस घटना से भाई भाई का दुश्मन बन गया। इसके परिणाम स्वरूप वादी में दंगे और आतंकवादियों की नींव मज़बूत हो गये। दूध और शक्कर की तरह मिल-जुलकर रहते हिन्दू मुस्लमान भाईयों के बीच अदृश्य दीवारें खड़ी हो गयीं। घाटी में 'मुस्लिम कांफ्रेंस' का गठन हुआ। 1942 में जिन्ना साहब कश्मीर आये तो उन्होंने 'मुस्लिम कांफ्रेंस' की सभा में भाषण दिया - ''भाइयों, मुसलमानों का एक मंच है, एक खुदा, एक कलमा। सभी इस झंडे के नीचे आकर अपने हकों के लिए लड़ें।''[5] गांधीजी और नेहरू ने जिन्ना साहब से मिलकर मुस्लिम लीग और कांग्रेस की समस्यायें मिल बैठकर आपस में सुलझाने की पेशकश की। लेकिन जिन्ना साहब तो द्विराष्ट्र नीति पर अड़े रहे। उन्होंने कहा कांग्रेस को हिन्दुओं और लीग को मुसलमानों की संस्था मानो तभी बात होगी। जिन्ना साहब की जिद्द ने 15 अगस्त 1947 को देश दो टुकड़ों में बंट गया - भारत और पाकिस्तान। दोनों तरफ मारकाट, लूट, आगजनी शुरू हो गयी। ''सुना है अमृतसर - लाहौर से लाशों से पटी रेलगाडियां दिल्ली आ रही हैं और दिल्ली से कटी-पिटी लाशें जवाब में पार्सल की जा रही हैं। ठट्ठ के ठट्ठ लोग पोटली-बुगचे उठाये रातों-रात घर बार छोडकर भाग निकले हैं। हे राम, कैसी आज़ादी मिली।''[6]

सबसे बड़ी दयनीय स्थिति में थे कश्मीरी लोग। उनको पता नहीं था कि भारत में रहे या पाकिस्तान गए। 1990 घाटी के पंडियों के लिए सबसे अभिशाप भरा वर्ष रहा। वादी से पंडितों का सामूहिक निष्कासन इस वर्ष में हुआ था। करोड़ों की संपत्ति छोड़कर करीब एक लाख पंडित वादी छोड़कर बनिहाल पर चले गए। वादी छोड़कर चले गए पंडितों के कई घर जला दिए गए हैं, कइयों

पर आतंकवादियों ने कब्ज़ा कर लिया है। वहां किसी के दरवाज़े पर मेहंदी का पैकेट रखा मिलता तो घरवाले समझ लेते कि जेहादी उनकी बेटी से विवाह करना चाहते है। कमला-विमला के वक्ष काटकर, कान में डेजारोहु की तरह लटकाए जा रहे थे, बांडीपुरा के टुक्कर गांव की युवती को भोगने के बाद, ज़िंदा ही आरी से दो हिस्सों में कटा जा रहा था। डाउन ताउन में बी.एस.एफ की गाड़ी पर उग्रवादियों ने बेम फेंगा। मंदिर, धर्मशालायें, यात्रीगृह, सराएँ नए शरणार्थियों से पटने लगीं। जहां भी सर पर छत दिखी, पंडितों ने धोती, टाट-चददरें बांधकर आड़ कर लीं। ये शरणार्थी दिल्ली और जन्मू में बनाये शिविरों में अमानवीय ज़िन्दगी जीने के लिए विवश हो गए। रिलीफ फंड से उन्हें अन्न मिल गया। पर अन्न से सभी समस्याएँ दूर नहीं होंगी। लेखिका लल्ली के माध्यम से अपना ही दुःख प्रकट करती है - ''घर के अर्थ वही जानता है, जिसका घर छूट गया हो, घर छिनना, अपने भूगोल, अपने इतिहास और अपने स्मृति संसार से कट जाना होता है। घर कोई किसी के इशारे पर अकारण ही नहीं छोड़ सकता।''[7]

लेखिका के इन शब्दों में विस्थापन की भयानकता हम देख चुके है - ''एक बार पशुओं से भी बदतर जीवन जीते, केम्पों, दड़बों में रहते-सड़ते विस्थापितों से पूछो, कि घर छूटना कैसा होता है? बीमारियों, अपमानों और मनोरोगों के बीच जीते, उन स्वाभिमानी लोगों से पूछो, लू के थपेड़ों, बिच्छू-सांपों के बीच जीते लोगों से पूछो, उन्हें अपने उम्रों के घरौंदे छोड़ने पर मजबूर क्यों होना पड़ा?''[8] आखिर 1999 भी बीत चुका। तकनीकी करिश्मों, औद्योगिक, कंप्यूटर और साइबर क्रांति से विश्व को ग्लोबल विलेज में बदलता दशक। एक दशक और बीत गया। लेकिन विस्थापित कश्मीरी पंडितों की हालत में कोई बदलाव नहीं आया है। पाकिस्तान 1999 में सीमा पार कर कारगिल, द्रास, बटालिक, पूंछ सेक्टर तक कब्ज़ा करते-करते आ गया। भारतीय फौजों से भयंकर युद्ध हुआ। सैकड़ों पाकिस्तानी मरे गए और अनेक भारतीय जवान शहीद हुए। घाटी में आतंक बढ़ गयी। मां-बाप अपने बाल-बच्चों को नौकरी केलिए देश-विदेश भेजते हैं। घर-बार के मोह में बच्चों की ज़िन्दगी बर्बाद करना वे नहीं चाहते है। उनके विचार हैं ''इस उम्र में पेड़ को उखाड़ दो, तो दूसरी मिट्टी में थोड़े जड़ पकड़ लेगा?''[9]

उपन्यास के आरम्भ में एक संयुक्त परिवार के खुशहाल का चित्रण हुआ तो अंत तक आते-आते वह पूरा परिवार तितर-बितर हो जाता है। विस्थापन से एक संयुक्त परिवार में हुए दरारें लल्ली के यह कथन द्वारा लेखिका पाठकों के सामने प्रस्तुत करती है। बुढ़ापे में लल्ली को अपना जन्मभूमि छोड़कर न्यू जेर्सी जाना पड़ा। उसकी चाह है कि मरने से पहले वह अपना मिट्टी लौट आएगी। अपनी बेटी से वह कहती है कि ''नब्बे वर्ष पुराना चोला बेअंत खिंचते इंतज़ार का साथ नहीं निभा पायेगा।''[10]

<u>निष्कर्ष</u>

कथा सतीसर अपूर्ण है क्योंकि लेखिका भूमिका में कहती है - ''कोई भी कथा पूर्ण नहीं होती। वैसे ही, जैसे कोई भी खोजा गया सत्य अंतिम सत्य नहीं होता और न ही कोई परीक्षण मुकम्मिल।''[11] अब 2018 आ चूका है, लेकिन कश्मीर घाटी के दर्द का कोई अंत नहीं। कश्मीर

समस्याएँ आज भी अखबारों का मुख्य विषय है। लेखिका ने पात्रों के माध्यम से पृथ्वी के स्वर्ग कश्मीर को नरक बनाने के ज़िम्मेदार शासकों और राजनीतिक नेताओं की भूलों, असावधानियों और ढुल-मूल नीतियों को पर्दाफाश करने का प्रयास किया है। कश्मीर से विस्थापन का अंधेरा मिट जायेगा फिर घाटी में सवेरा होगा। यही उम्मीद के साथ चंद्रकांता जैसे कश्मीरी पंडित जी रही है।

सन्दर्भ ग्रन्थ

1. *एन. मोहनन; सकमालीन हिंदी उपन्यास; आवृत्ति संस्करण 2015; वाणी प्रकाशन; नयी दिल्ली; 2013; पृ. 69.*
2. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ. भूमिका.*
3. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.7 भूमिका.*
4. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.9-10 भूमिका.*
5. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.147*
6. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.195*
7. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.556*
8. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.557*
9. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.582*
10. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.17*
11. *चंद्रकांता; कथासतीसर; आवृत्ति संस्करण 2010; राजकमल प्रकाशन; नयी दिल्ली; 2001; पृ.10 भूमिका*

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विवर्तपरिणामयोः साम्यवैषम्यविचारः।

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भारतीयदर्शनेषु शून्य - आरम्भ - परिणाम विवर्ता चत्वारो वादाः कार्यकारण भावविषये प्रसिद्धः। तत्र माध्यमिकबौद्धतां शून्यमेव परं तत्वम्। ज्ञानज्ञेय ज्ञातृ भावमय सम्पूर्णविश्वां प्रति तेषां ''सर्वं शून्यम्'' इति सिद्धान्तः। न्यायवैशेषिकस्वीकृतः आरम्भ वादम्। यत आरम्भवादाभिःप्रायेण कार्यमनागतमारभ्यते। न्याय कार्यकारणवादानुसारेण कार्यं कारणात्पूर्णरूपेण भिन्नम्। सांख्यदर्शने प्रपञ्चः त्रिगुणात्मकप्रकृतेः परिणामो वर्तते। अद्वैतमते प्रपञ्चः ब्रह्मविवर्ताऽस्ति।

अद्वैतवेदान्तिनां मध्येऽपि द्विविधौ पक्षौ स्तः-

- परिणामाद्वैतिनः विवर्ताद्वैतिनश्चेति। तत भास्कर-भर्तृप्रपञ्च - यादवप्रकाशादयः परिणामाद्वैतिनः। तेषु भास्करः उपाधिपरिणामस्वीकर्ता। बृहदारण्यकव्याख्याता भर्तृप्रपञ्चः ब्रह्मसूत्र भाष्यरचयिता यादवप्रकाशश्च स्वरूपपरिणामवादमेव स्वीचक्रतुः। विवर्ताद्वैतवादस्तु शङ्क.राचार्यसम्मतः। तत्र परिणामो नाम उपादानसमस्ताकान्यथाभावः। विवर्तस्तु उपादान विषमसत्ताकाऽन्यथाभावः इति।[1]

परिणामवादः-

परिणामाद्वैतिनां मते ब्रह्म सविशेषमेव। विजीतीयविशेषाणां य ब्रह्माणि अभ्युपगमात्। परं तु एतेषां मते वस्तुतः जीवब्रह्मणोः भेदानभ्युपगमात् स्वाभाविकभेदस्वीकाराच्च सजातीयाः विशेषाः परं न स्वीक्रियन्ते। एतेषां मते उपादानोपादेययोः भेदाभेदः तन्निबन्धनं च समानाधिकरण्यम्।

आचार्याः रामानुजाचार्याः अपि परिणामाद्वैतमेव उपस्थापयामासुः। तत्र एतावान् भेदः-

सिद्धान्ते हि जीवब्रह्मणोः स्वाभाविक भेदानभ्युपगमात् भेदस्य सुस्थिरत्वेन सजातीयविशेषा अपि स्वीक्रियन्ते इति सजातीय - विजातीय स्वगतविशेषणस्वरूपविशेषत्रय विशिष्टं ब्रह्म इति। तस्मात् एते आचार्याः विशिष्टाद्वैत मतप्रवर्तयितारः इति प्रथां प्रापुः।

विवर्त्तवादः-

विवर्त्ताद्वैतिनो हि मन्यन्ते अशेषविशेष प्रत्यनीकं प्रत्यक् स्वयंज्योतिः चिन्मात्रं ब्रह्मैव परमार्थः। तद्व्यतिरिक्तं सर्वं मिथ्या। ''एतद्वै सत्यकाम परं चापरं च ब्रह्म।[2] द्वै विद्ये वेदितव्ये:''[3] इत्यादि श्रुत्यनुसारेण परमपरं चेति द्विविधं ब्रह्म आम्नातं भवति। तत्र परविधाविषयः परं ब्रह्म निर्विशेषम्। तज्ज्ञानंच नित्यमोक्षकारणम्। अपरविधाविषयः अपरं ब्रह्म सविशेषम्। तदुपसनं च गतिद्वारकत्तर तमभावापन्नफलसाधनं क्रममुक्तिहेतुश्च। तं तथा यथोपासते तदेव भवति इति वचनेन उपासनानुगुणस्यैव फलस्य निर्णयात्।

ब्रह्म च विवर्तोपादानमेव। तत्र विवर्त्तो नाम उपादानविषमसत्ताकः अन्यथाभातः इति प्रागेवोक्तम्। ब्रह्मणः पारमार्थिकसत्तावत्त्वात् प्रपञ्चस्य च व्यावहारिकसत्तावत्त्वात् उपादानापेक्षय विषमसत्ताकत्वम्। जगदादौ च आत्मा

एक एवासीत्। स च व्योमादिसकलप्रपञ्चरूपेण परिणमति। यथा वा बीजं वृक्षरूपेण।

विवर्तपरिणामयोरभेदम्:-

*विवर्तपरिणामयोः मते समा*नोऽपि *वर्तते। विवर्तवादिमते प्रपञ्चः ब्रह्माविवत्ता*ऽस्ति। *तेनैव साकं हि, अनिर्वाच्यमाया - परिणामा*ऽपि। *परिणामवादिमते प्रपञ्चः त्रिगुणात्मकप्रकृतेः परिणामो वर्तते।*

विवर्तवादिमतानुसारेण कार्यप्रपञ्चाऽ*विधाकार्यं सत् सत्त्वरजस्तमोगुण ात्मकस्तथा विशुद्धो*ऽ*स्ति। कारणरूपं ब्रह्म गुणातीतम्, अतिशुद्धं पापविद्धमस्ति। कार्यं ससीमं तथा कारणामसीममास्ति तथाखण्डमपि वर्तते। नास्त्युभयोरभेद इति। कार्यं मिथ्या मायापरिणामो अस्ति। मायाधर्माः शुद्धं ब्रह्म न स्पृशन्ति।*

विवर्तपरिणामयोः भेद - विचार।

विवर्तपरिणामयोर्लक्षणानि च आचार्यैः *परस्पर भिन्नरूपाणि व्याख्यातानि -''वस्तुनस्तत्समसत्ताकोऽन्यथा भावः परिणामः, तदसमसत्ताको विवर्त इति वा, कारणसलक्षणोऽन्यथाभावः परिणामः, तद्विलक्षणो विवर्त इति वा, कारणभिन्नं कार्यं परिणामः, तदभेदं विनैव तदव्यतिरेकेण दुर्वचं कार्यं विवर्त इति वा।*[4] *इत्थमेव वेदान्तपरिभाषा ग्रन्थ*ाऽ*पि परिणामविवर्तयोर्लक्षणानि कृतानि विधन्ते -''परिणामो नामोपादान समसत्ताककार्यापत्ति विवर्तो नामोपादानविषमस त्ताककार्यापत्तिः।*[5] *उपादान समानजातीयं कार्यं विवर्त इति, तथा उपादानविषम*

जातीयं कार्यं परिणाम इति, यथा दुग्धस्य परिणामो दधीति, तथा शुक्तिरूप्यं शुक्ते विवर्त इति।

अद्वैतवेदान्तस्यायं विवर्तवादः, परिणामवादि मतसत्कार्यवादेनैकतः विलक्षणोढस्ति। परिणाममतानुसारेण कार्यकारणव्याख्या साधु निरूपयितुमशक्या। तत् अनुसारेण कार्यं कारणतुल्यसत्ताकमस्ति। अद्वैतिनः कार्यं सदिति नापितु कारणं सदिति प्रतिजानन्ति। अयं सद्विवर्तवाद इत्यपि व्याख्यायते। दृष्टचानया सत्कार्यवादस्तथारम्भवादाढद्वैतवादस्य विवर्तवादस्य च भूमिकाढस्ति - ''प्रतिष्ठितेऽस्मिन् परिणामवादे स्वयं समायाति विवर्तवादः'' आरम्भवादः परिणाम वादश्येति विवर्तवादस्य भूमिकेयम्''।[6] श्रीशंकराचार्यस्य कथनमस्ति यत् द्रष्ट्ट - दृश्य - भोक्तृ - भोग्य ज्ञातृज्ञेय - कार्यकारणादि विभागोऽद्वैतमते व्यावहारिक : सन्नपि वस्तुतोऽस्य पारमार्थिकं महत्वं नास्ति। परमार्थसन्तु एकं ब्रह्मास्ति। अन्यवस्तुसत्ता तदधी नैवास्ति। समुद्रतरङ्गा यथा समुद्राद् भिन्ना न सन्ति, मृत्पात्राणि तदभिन्नानि सन्ति, सुवर्णाभूषणानि सुवर्णाद् भिन्नानि न भवन्ति, तद्वदेव प्रपञ्चाऽपि कारणाद् ब्रह्मणो भिन्नो नास्ति। वाचारभ्यन्ते घटादयो न वस्तुरूपेण सन्ति, तत्वं, तु मृदेवास्ति। तद्वद् आपाततो ब्रह्माणि प्रपञ्चसत्ता नाममात्रेण विद्यते। परमार्थसन्तु केवलं ब्रह्मैव।[7] आकाशादयोऽपि याछिष्ठानसत्तयैव सदिति विभाव्यन्ते। वस्तुतो ब्रह्मातिरिक्तं द्वितीयं सन्नास्ति।

अत्र पूर्वपक्षी वदति कथं चिन्मात्रं ब्रह्म जडरूपेण परिणामं लभते इति चेत्, न। ब्रह्माणि परमार्थतः काश्चित् परिणामो नाम नास्ति। वस्तुतः अपरिणतमेव परिणामविशिष्टमिव भाति। एकमेवं सत् अनेकधैव च

अविद्यावशात् विवर्तमानं आत्मैव, आत्मानं चिद्रूपं ज़डरूपमिव अद्वितीयं सद्वितीयमिति च जानाति। तथा च अविद्योपादानात्मकस्वप्नादिप्रपञ्चवत् महदादिप्रपञ्चसृष्टिः। अत एव च ''सर्वं खल्विदं ब्रह्म[8] ''आत्मैवेदं सर्वम्''[9] ''नेह नानास्ति किञ्चन''[10] ''सदेव सोम्येदमग्र आसीत्''[11] इत्यादयः श्रुतयः अद्वैतवादमुद्घुष्यन्ति। वेदेढपि ''इन्द्रो मायाभिः पुरुरूप इयते''[12] ''रूपं रूप प्रतिरूपो बभूव तदस्य रूपं प्रतिचक्षणाय''[13] इत्यात्मिकः ऋचःस्फुटतयैव भेदज्ञानाय मायानिबन्धनत्वं प्रतिपादयन्ति। एवं श्रुत्यन्तरे भेददर्शननिन्दा च स्पष्टा भवति ''मृत्योस्स मृत्युमाप्नोति य इह नानेव पश्यति''[14] इति। ततश्य अद्वितीयं ब्रह्मैव पारमार्थिकं, भेदज्ञानं च अविद्योपाधिकमेव इति निरूपेतव्यम्।

श्रीवाचस्पातिमिश्रैरुक्तं यत् 'न खलव नन्यत्वमित्यभेदं ब्रूमः - किन्तु भेदं व्यासेधयामः।[15] अर्थादनन्यत्वार्था नास्त्यभेदः, अपि तु अस्ति भेद निषेध इति। इदमस्य तात्पर्यं, चत्कारणसत्तामन्तरा कार्यसत्ता नास्ति। मृत्तिकेत्येव सत्यम्'' अस्य व्याख्यायाम् ''आचार्यशङ्कर श्रीभगवत् पादैरुक्तम् यच्छुतावस्य तात्पर्यं कारणब्रह्मविषयकमन्ति। कारणमस्ति ब्रह्मैव यतस्तत्रिकालाबाधितमस्ति। नामधेयमात्रमेतद नित्यम्''[16] अस्यैव विवर्तवादस्य व्याख्यायां भगवत्पादेरुक्तम्, घटाकाशो यथा महाकाशाद्भिन्नो न भवति, तद्वदेव विश्वप्रपञ्चोढपि अपरिमाण्युपादानात्रास्त्यन्वदिति। परिणामिवस्तूनि नित्यानीति विप्रतिषिद्धमेतद्। यन्नित्यं तदस्ति त्रिकालाबाध्यम्। यत् बाध्यते, तदनित्यम्, यथा रशवासर्पः। प्रकाशपुरस्सरं दर्शने रज्ज्वां मिथ्या विलेशयो न दृश्यते, इत्थमेव तत्त्वज्ञाने सति ब्रह्मसाक्षात्कारे प्रपञ्चो विलीयते। अतो बाधिततया प्रपञ्चो नास्ति सत्यः। सांख्यदर्शनस्यायं सिद्धान्तो यत्कारणात्कार्यस्य व्यतिरेको नास्ति तदसङ्ग तमसि इत्थमेवासत्कार्यवादस्यायं सिद्धान्तो सत्कार्यं कारणादि ्भत्नमभिनवमुत्पद्यते,

असङ्दतोऽस्ति। यतोहि वस्तुरूपेण कार्यसत्ता कारणसत्तया न व्यतिरिच्यते। किन्तु अद्वैतमते कार्यसत्ता ऽकाशकुसुमसत्तावदलीकापि न भवति। यताऽलीकस्य न भवति कदापि प्रतीतिः, विश्वपरपञ्चो वन्ध्यापुत्रवदलीको नास्ति। अद्वैतनये कार्यं मिथ्याऽनिर्वचनीयंमन्यते। श्री वाचस्पति मिश्रेण प्रपञ्चमिथ्यात्वेऽनुमानं पठितम्।'' येषां वस्तूनां प्रत्यक्षरूपेण बाधो दृश्यते तानि नित्यानि न भवन्ति, यथा मृगतृष्णजलम्, इत्थमेव सकलोऽपि प्रपञ्चोऽस्तिमिथ्या। यत्सद्वस्तु तत् त्रिकाल सद्भवति, यथा चिदात्मा।''[17] अनेनेदमायाति यत्सत्यामिथ्या प्रकाशान्धकारवद् विरुद्धमस्ति। नास्ति द्वयोरभेदसबन्धं अतोऽद्वैतिभिः कार्यं कारणात्स्वतन्त्रमिति न स्वीकृतम्।

सांख्या यत्पपरिणामित्वेन नित्यमित्या - चक्षते, नैयायिकाश्चोत्पन्नद्रप्यत्वेनानित्यामि त्युपदिशन्ति तदेवाद्वैतिनो मिथ्या किं वाऽनिर्वाच्यमिति चांदिशन्ति। व्यावहारिकं सत्वन्तु, अद्वैतिनोऽपि मन्यन्ते। परमार्थरूपेण प्रपञ्चसत्ता ब्रह्मणोऽतिरिक्ता न भवति। ''नाभाव उपलब्धेः''[18] वैधर्म्याच्च न स्वप्नादिवत्[19] अनयोः सुत्रयोर्विज्ञानवादिमतखण्डने प्रपञ्चस्यालीकत्वस्य स्वप्नादिवत्प्रातिभासिकमिथ्यात्वस्य खण्डनम् अपि सिद्धति। आचार्य श्रीशङ्करभागवत्पादैरुक्तं यत् विश्वप्रपञ्चः स्वप्नगजादिवन्नास्ति सामयिकः, नवा व्यक्तिं प्रतिनियतः। यावद् - ब्रह्मज्ञानं प्रपञ्च प्रत्ययनिवारणं कर्तुमसंभवमिति।[20]

उपरिनिर्दिष्ट विचारप्रक्रियायां ब्रह्मविवर्तोपादानं तथा माया परिणाम्युपादानमिति वर्णितम्। विवर्तोपादानं ब्रह्मैव मायोपहितं सन्निमित्तकारणं मन्यते। ''यतो वा इमानि, मायिनं तु महेश्वरं, तदैक्षत, एकाकी न रमते, एकाऽहं बहु स्याम्'' इत्यादिभिर्वचनैर्ब्रह्मैव निमित्तमुपादानञ्चोभयं सिद्धयति अत एवाद्वैतमते ब्रह्माभिन्न निमित्तोपादानमिति स्वीक्रियते। विवर्तवादेऽपि सर्वज्ञस्य सर्वशक्तिमतश्येश्वरस्य स्थानमस्ति। स ईश्वरः मायोपहितो वर्तते, उक्तमिदं पुरस्तादेव। मायोपहितोढत एव मायाधीश ईश्वर एव सृष्टिकर्तृत्वमर्हति। विशुद्धे चेतने कर्तृत्वादिधर्मा न भवन्ति। शुद्धे ब्रह्माणि शुभा अशुभा वा कोऽपि गुणा न सम्भवन्ति।

ब्रह्माणि न कोऽपि धर्मः अस्ति, निधर्मकत्वात्। कूटस्थत्वात् नित्यशुद्धबुद्धमुक्तस्वभावत्वाच्च। आहुश्च शङ्कराचार्याः बृहदारण्यका`पनिषद्भाष्ये - ''न च निरवयवं विक्रियमाणं दृष्टं क्वाचित्''[21] इति। अन्यत्र च - ''न च निखयवस्य (अनौपाधिक) अनेकधर्मवत्वे दृष्टान्ताऽस्ति''[22] इति च। सर्वज्ञात्म मुनिभिरपि अयमेव सिद्धान्तः प्रतिपादितोऽस्ति।

संक्षेपशारीरके - विवर्तवादस्य हि पूर्वभूमिः वेदान्तवादे परिणामवादः।

व्यवास्तितेऽस्मिन् परिणामवादे स्वयं समायाति विवर्तवादः।। इति।''[23]

परिणामवादोऽपि विवर्तवादौपयिकः एवेति विशदीकृतम्। अमुमेव सिद्धान्तं पुरस्कृत्य कल्पतरुकारः एवमाह - वाक्यकारीहि - नासता

निस्पाद्यत्वात्, प्रवृत्यानर्थक्यं तु सत्वाविशेषात् इति प्रपञ्चस्य सदसत् प्रश्नविरसनेन पूर्वपक्षं प्रदर्श्य संव्यवहारमात्रत्वात्'' इति प्रपञ्चस्य अनिर्वचनीयतां सिद्दान्तयति इति।संक्षेपशरीरके अपि ''अद्वैतमेव परिरक्षति वाक्यकारः'' इत्याभेप्रयन्ति। तथा च - ''स्वयंज्योतिषः प्रत्यग्वस्तुनः एकबुद्धयनधिगम्य पराग्बुद्धिगम्यधर्मवत्वे नैव घटते''[24] इति वार्तिककार सिद्धान्तोढपि विवर्तवादानुकूल एवेति निर्णयः सुलभः भवति।

उपसंहार

समन्वयाधिकरणे शङ्कराचार्येण एवं उक्तम्''किञ्चित् परिणामनित्यम् किञ्चित् कूटस्थनित्यम्। इदं तु पारमार्थिकं कूटस्थनित्यं व्योमवत् सर्वव्यापि सर्वविक्रियारहितं नित्यतृप्तं निरवयवं स्वयं ज्योतिस्वभावम्''[25] इति। एतद् भाष्यविवरणाय प्रवृत्ताः वाचस्पतिमिश्रा अपि - परिणामतद्वतोः भेदाभेदविकल्पनेन अनिर्वयनीयत्वमेव इति प्रकटीचक्रुः। किञ्च सर्वैरपि वादिभिः मोक्षस्य नित्यत्वं तावदङ्गीक्रियते। तच्चेदं पारमार्थिकं कूटस्थनित्यत्वस्वीकर्तृणामेव स्वरसतः सङ्गच्छते। सगुणात्मवादे कूटस्थानङ्गीकारे नित्यफलमेव नोपपादयितुं शक्यत इति अनन्त स्थिरफलत्वं मोक्षत्वमपि उपपादयितुं न शक्यते। अतः ब्रह्मणः परिणाम्युपादानत्वं नैव युक्तं इति विवर्तवादावेचारः।

टिप्पण्यः।

1. सिद्धान्तलेशसंग्रहः, प्रथम परिच्छेदः।
2. मैत्रायण्युपनिषत्, 6/8
3. मुण्डकोपनिशद्, 1/1/4
4. सिद्धान्तलेशसंग्रह, प्रथम परिच्छेदः।

5. वेदान्तपरिभाषा - प्रथम परिच्छेदः।

6. अद्वैतब्रह्मसिद्धिः-

7. ब्रह्मसूत्रं, पृ.2.2.14

8. छान्दोक्योपनिषद् 3/14/1

9. छान्दोक्योपनिषद् 7/25/2

10. बृहदारण्योकोपनिषद् 4/4/19

11. छान्दोक्योपनिषद् 6/2/1

12. ऋग्वेद संहित 6/4/7/19

13. ऋग्वेद संहित 6/47

14. कठोपनिषद् - 4/10

15. ब्रह्मसूत्रं पृ.2-1-14

16. ब्रह्मसूत्रं पृ.2-1-14

17. भाष्यभामती पृ.2-1-14

18. ब्रह्मसूत्रम् पृ.2/2/28

19. ब्रह्मसूत्रम् 2-2-36

20. ब्रह्मसूत्रशाङ्करभाष्यं 2-2-28

21. बृहदारण्यार्कोपनिषद् शाङ्करभाष्यं 3-4-5

22. बृहदारण्यकोपनिषद् शाङ्करभाष्यं 6-3-34

23. संदोपशारीरके पृ.2-61

24. ब्रह्मसूत्र शाङ्करभाष्यम् 2-2-4.

ग्रन्थसूचि

1. अद्वैततत्वमींमासा - अभेदानन्द भट्टाचार्यः, परिमल पब्लिकेशनस्, शक्तिनगर।
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3. ब्रह्मसूत्रशाङ्करभाष्यं (एकादशटीकासंयुतं) - योगेश्वरदत्तशर्मा, जाग प्रकाशक दिल्ली।
4. सिद्धान्तलेशसंग्रहः-
5. बृहदारण्यकोपनिषद् (सानुवाद शाङ्करभाष्यसहित गोविन्दभवन गीताप्रेस, गोरखपूर) धर्मादि सप्तभाव
6. वेदान्त - परिभाषा - श्री. ऐस्. सुब्रह्मण्यशास्त्री, चौखम्बा अमरभारती प्रकाशन।
7. संक्षेपहरीरकं - सर्वज्ञात्ममुनि - चौखम्भा संस्कृत संस्थान, वाराणासी।

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പരിസ്ഥിതി ഫോക്‌ലോർ: സിദ്ധാന്തവും പ്രയോഗവും

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പ്രകൃതിയും മനുഷ്യനും തമ്മിലുള്ള പാരസ്പര്യത്തിലാണ് ഫോക്‌ലോറിന്റെ അടിസ്ഥാനദർശനങ്ങൾ നിലകൊള്ളുന്നത്. സ്വന്തം സാംസ്കാരികാനന്യതകളെക്കുറിച്ച് മികച്ച ധാരണയുണ്ടാക്കുന്നതോടൊപ്പം അന്യസാംസ്കാരികസ്വത്വബോധങ്ങളെ ആദരിക്കാനും അംഗീകരിക്കാനും പ്രേരിപ്പിക്കുന്നുവെന്നതാണ് ഫോക്‌ലോറിന്റെ പ്രധാനധർമ്മമെന്ന് വിശ്രുത ഫോക്‌ലോറിസ്റ്റ് റോജർ ഡി. അബ്രഹാംസ് നിരീക്ഷിക്കുന്നുണ്ട്. ആഗോളവത കൃത സമകാലികസാഹചര്യങ്ങളിൽ വ്യത്യസ്ത സാംസ്കാരിക സ്വത്വബോധ ങ്ങളെ ആദരിക്കുകയെന്ന ഫോക്‌ലോർ അഭിവീക്ഷണത്തിന് വലിയപ്രാധാ ന്യവും പ്രസക്തിയുമാണുള്ളത്. പരസ്പരാശ്രിതത്വത്തോടെ പുലരേണ്ട സാമൂ ഹികഘടനയെ ഉയർത്തിപ്പിടിക്കുന്ന ഫോക്‌ലോർ പഠനശാഖ സാംസ്കാരിക ബഹുലതകളുടെ അരങ്ങായിട്ടാണ് ലോകത്തെ കാണുന്നത്. ഇവിടെ ഭിന്ന വിശ്വാസദർശനങ്ങൾക്കും ലോകവീക്ഷണങ്ങൾക്കും അതതിന്റേതായ സ്ഥാനം കല്പിക്കുന്നുണ്ട്.

ഒരു ജനതയുടെ ലോകവീക്ഷണമാണ് (World view) അവരുടെ ഫോക്‌ലോറിൽ പ്രതിഫലിക്കുന്നത്. തന്മൂലം ഒരു സമൂഹത്തെ മനസ്സിലാക്കാ നുള്ള ഏറ്റവും നല്ല വഴി അവരുടെ ഫോക്‌ലോറിനെ അടുത്തറിയുക എന്നതാ ണ്. വൈവിധ്യങ്ങളെ ആദരിക്കാനും അവയുടെ ആന്തരികസത്ത മനസ്സിലാ ക്കാനും ഭിന്നലോകവീക്ഷങ്ങളെക്കുറിച്ചുള്ള പഠനം സഹായിക്കുന്നു. പ്രകൃ ത്യുന്മുഖജീവിതദർശനങ്ങളാണ് പാരമ്പര്യസമൂഹങ്ങളുടെ ലോകവീക്ഷ ണത്തെ രൂപപ്പെടുത്തുന്നതിൽ നിർണ്ണായകമായിട്ടുള്ളതെന്ന് ഫോക്‌ലോർ പഠ നങ്ങൾ വ്യക്തമാക്കുന്നു. പ്രകൃതികേന്ദ്രിത ജീവിതാവബോധങ്ങളിലാണ് ഫോക്കലകളുടെ സാംസ്കാരികസജീവത നിലനിൽക്കുന്നത്. ഒരു ജനത

യുടെ പാരിസ്ഥിതിക ആവാസവ്യവസ്ഥയ്ക്കും അവരുടെ കലാവിഷ്കാരങ്ങൾക്കുമിടയിൽ അവിച്ഛേദ്യമായ ഒരു നാഭീനാളബന്ധം നമുക്ക് ദർശിക്കാനാകും.

കേരളം നാടോടിക്കലകളുടെ ഒരു കൂത്തരങ്ങാണ്. ആചാരാനുഷ്ഠാനങ്ങളുമായി കെട്ടുപിണഞ്ഞുകിടക്കുന്ന എണ്ണമറ്റ നാടോടികലാവിഷ്കാരങ്ങളാണ് കേരളീയകലാരംഗത്തെ സർഗ്ഗാത്മകവും സമ്പുഷ്ടവുമാക്കുന്നത്. ജനനം മുതൽ മരണം വരെ ഒരാളുടെ വ്യക്തിജീവിതത്തിലെ ഭിന്നദശാസന്ധികളിലൊക്കെ പാട്ടും നൃത്തവും അകമ്പടി സേവിക്കുന്ന പാരമ്പര്യകലാവിശേഷങ്ങൾ ഒട്ടനവധിയാണ്. പന്ത്രണ്ടുമാസവും ഏതെങ്കിലും നിലയിലുള്ള ഉത്സവാഘോഷങ്ങൾ കൊണ്ട് പ്രസാദാത്മകമായ സാസ്കാരികപരിസരമാണ് കേരളത്തിനുള്ളത്. നാടൊന്നാകെ അണിചേരുന്ന വലിയൊരുകലാവേദിയായി നാട്ടിൻപുറങ്ങൾ മാറുന്ന കാഴ്ച ഇവിടെ സർവ്വസാധാരണമാണ്. ഓണം, വിഷു, തിരുവാതിര, ക്രിസ്മസ്, റംസാൻ തുടങ്ങിയ ഏതാഘോഷാവസരങ്ങൾക്കും നയനാനന്ദകരമായ ദൃശ്യകലാവിഷ്കാരങ്ങളുടെ അകമ്പടിയുണ്ടാകും. മനുഷ്യനും പ്രകൃതിയും മറ്റുജീവജാലങ്ങളും ഒരു മഹാസിംഫണിയുടെ സംയോഗാത്മകതയിൽ അലിയുന്ന പൂരാഘോഷങ്ങളുടെ നിറപ്പകർച്ചകൾ അപൂർവ്വസുന്ദരമായ കേരളീയകലാനുഭവത്തിന്റെ മഹനീയ മാതൃകയാണ്. സംസ്കാരങ്ങളുടെ നിജപ്പെടുത്തലിനും സാംസ്കാരികാതിജീവനത്തിനും ഇത്തരം കലാകൂട്ടായ്മകൾ നല്കുന്ന സംഭാവന നിസ്സാരമല്ല. ഏതൊരു ഫോക് ലോർ ആവിഷ്കാരത്തിനും ആധാരമായി വർത്തിക്കുന്ന പാരിസ്ഥിതികപശ്ചാത്തലമിവിടെ സവിശേഷപ്രാധാന്യമർഹിക്കുന്നുണ്ട്. പരിസ്ഥിതി ഫോക്ലോർ പഠനം ഏറെ പ്രസക്തമാകുന്നതിവിടെയാണ്.

പരിസ്ഥിതി ഫോക്ലോർ (Eco Folklore)

പ്രമേയത്തെയും ആവിഷ്കാരസന്ദർഭങ്ങളെയും മുൻ നിർത്തി നവീന ഫോക്ലോർ പഠനശാഖയിൽ നിരവധി ഉൾപ്പിരിവുകളുണ്ട്. അർബൻ ലോർ, പബ്ലിക് ലോർ, പ്ലാന്റ് ലോർ, മെറ്റാ ഫോക്ലോർ, പ്രയോഗ ഫോക്ലോർ, ബോഡിലോർ, ഫാൻസ് ലോർ, സൈബർലോർ, തുടങ്ങിയ വിവിധഫോക്ലോർ പഠനവഴികളിൽ

ഏറ്റവും പ്രസക്തമായതാണ് പരിസ്ഥിതി ഫോക്‌ലോർ പഠനം. ഫോക്‌ലോർ പാഠങ്ങൾക്ക്(Texts) അതു നിലനിൽക്കുന്ന സ്ഥലരാശിയും അതാവിഷ്കിക്കപ്പെടുന്ന സാമൂഹികസന്ദർഭങ്ങളുമപാഠഭേദങ്ങളുടെ താരതമ്യപഠനത്തിലൂടെ പാഠങ്ങളുടെ മൂലരൂപമന്വേഷിക്കുന്ന ചരിത്രാധിഷ്ഠിതവും ഭൂമിശാസ്ത്രപരവുമായ ഫോക് ലോർ പഠനസമ്പ്രദായത്തിൽ നിന്ന് വ്യത്യസ്തമായി പ്രാദേശിക ആവാസവ്യവസ്ഥകൾ ഓരോ സവിശേഷമായ ഇക്കോടൈപ്പുകളെ സൃഷ്ടിക്കുന്നതെങ്ങനെയാണെന്നാണ് പരിസ്ഥിതി ഫോക് ലോർ പഠനം പരിശോധിക്കുന്നത്.

ഇക്കോടൈപ്പുകൾ

പരിസ്ഥിതി ഫോക്‌ലോർ പഠനത്തിൽ വരുന്ന ഒരു പ്രധാന സങ്കല്പനമാണ് ഇക്കോടൈപ്പുകൾ. ഒരു ദേശത്തിന്റെ സ്ഥലകാല സവിശേഷതകളാണ് തനിമയുള്ള ഫോക്‌ലോർ ടൈപ്പുകളെ സൃഷ്ടിക്കുന്നത്. സസ്യശാസ്ത്രത്തിൽ നിന്ന് കടം കൊണ്ട പദമാണ് ഇക്കോ ടൈപ്പ്. സ്വീഡിഷ് സസ്യശാസ്ത്രജ്ഞനായ ഗോട്ട് ടുറേസ്സൺ ആണ് ഇക്കോടൈപ്പ് എന്ന ആശയം നാണയപ്പെടുത്തിയത്. പ്രാദേശിക പ്രകൃതി സവിശേഷതകളും ആവാസവ്യവസ്ഥകളും ഓരോ ഫോക് ലോർ ജനുസ്സുകളെയും തനിമയുറ്റതാക്കി മാറ്റിക്കൊണ്ടാണ് ഇക്കോടൈപ്പുകൾ സൃഷ്ടിക്കപ്പെടുന്നത്. കാൾ വാൻ സിഡോവിന്റെ പഠനങ്ങൾ ഇക്കോടൈപ്പ് ദ്ധാന്തങ്ങൾക്ക് കൂടുതൽ ഉൾക്കാഴ്ച നല്കുകയുണ്ടായി. ജൈവികചുറ്റുപാടുകൾ ഓരോ ജീവിവംശത്തിന്റെയും രൂപഘടനയിലും പെരുമാറ്റരീതികളിലും ചെലുത്തുന്ന സ്വാധീനം വളരെ വലുതാണ്. ഡോൾഫിനുകളുടെ കാര്യം ഉദാഹരണമായെടുക്കാം. ഏറ്റവും ബുദ്ധിശക്തിയും ഗ്രഹണശേഷിയുമുള്ള ജീവിവംശമാണ് ഡോൾഫിനുകൾ. അറ്റ്‌ലാന്റിക്ക് സമുദ്രത്തിൽ കഴിയുന്നഡോൾഫിനുകളും ദക്ഷിണ അമേരിക്കൻ കടലിൽ കഴിയുന്ന ഡോൾഫിനും ഭിന്നസ്വഭാവ സവിശേഷതകളാണ് പുലർത്തുന്നത്. ഡോൾഫിൻ എന്ന പൊതുവംശീയത നിലനിർത്തുമ്പോൾ തന്നെ ഇവ ഡോൾഫിനുകളുടെ വ്യത്യസ്ത ഇക്കോടൈപ്പുകളായി മാറുകയാണ്.

പരിസ്ഥിതി സംരക്ഷണവും ഇക്കോ ഫോക്‌ലോർ കാഴ്ചപ്പാടുകളും

പരിസ്ഥിതി സംരക്ഷണത്തിൽ പാരമ്പര്യനാട്ടുവിജ്ഞാനവും (Traditional Ecological Knowledge-TEK) ആചാരങ്ങളും നല്കിവരുന്ന സംഭാവന വളരെ വലുതാണ്. ആദിമഗോത്രജീവിതത്തിന്റെ പ്രകൃത്യുന്മുഖ ജീവിതദർശനങ്ങൾ ഇവിടെ സവിശേഷപരാമർശം അർഹിക്കുന്നുണ്ട്. പ്രകൃതിയും സംസ്കൃതിയും സംബന്ധിച്ച് താളാത്മകമായ ജൈവബന്ധമാണ് ആദിവാസി,ഗോത്രസമൂഹങ്ങൾ പുലർത്തിപ്പോന്നിരുന്നത്. കരുതൽ, പങ്കുവെയ്ക്കൽ, സഹനം, സംവേദനക്ഷമത, മന്ദവേഗത തുടങ്ങി എണ്ണമറ്റ മൂല്യസങ്കല്പനങ്ങൾ ഗോത്രസമൂഹം പുലർത്തിപ്പോന്നിരുന്നതായിക്കാണാം. പരിസ്ഥിതിസൗഹാർദ്ദപരമായ ഈ ജീവിതദർശനം അവരുടെ ആചാരാനുഷ്ഠാനങ്ങളിലും വിശ്വാസപാരമ്പര്യങ്ങളിലും മാത്രമല്ല, പാട്ടും കഥയും പഴഞ്ചൊല്ലുകളുമുൾപ്പെടെയുള്ള വാമൊഴിത്തോറ്റങ്ങളിലും പ്രതിഫലിക്കുന്നുണ്ട്. ഉദാഹരണത്തിന് അട്ടപ്പാടിയിലെ ഇരുള സമൂഹത്തിനിടയിൽ പ്രചാരമുള്ള ഒരു നാടൻപാട്ടിൽ മണ്ണും മനുഷ്യനും തമ്മിലുള്ള ഉഭയബന്ധത്തിന്റെ പ്രാധാന്യവും പ്രസക്തിയും ഇങ്ങനെ വ്യക്തമാക്കുന്നു:

"മണ്ണേ നമ്പീലേലയ്യാ മരമിരിപ്പൂ
മരത്തേ നമ്പീലേലയ്യാ മണ്ണിരിപ്പൂ
മരത്തേ നമ്പീലേലയ്യാ കൊമ്പിരിപ്പൂ
കൊമ്പേ നമ്പീലേലയ്യാ ചില്ലയിരിപ്പൂ
ചില്ലേ നമ്പീലേലയ്യാ ഇലയിരിപ്പൂ
ഇലയേ നമ്പീലേലയ്യാ പൂവിരിപ്പൂ
പൂവേ നമ്പീലേലയ്യാ കായിരിപ്പൂ
കായേ നമ്പീലേലയ്യാ നാമിരിപ്പൂ
നമ്മേ നമ്പീലേലയ്യാ നാടിരിപ്പൂ"

പരസ്പരാശ്രിതത്വത്തോടെ പുലർന്നുവന്നിരുന്ന ജൈവവ്യവസ്ഥയുടെ ഏറ്റവും ലളിതവും ഹൃദ്യവുമായ ആവിഷ്കരണമാണ് ഈ ഗാനത്തിൽ പ്രതിഫലിക്കുന്നത്. പ്രകൃത്യുന്മുഖമായ നാടോടി വിശ്വാസങ്ങളും പുരാവൃത്തങ്ങളും ദേശവ്യാപകമായി പരിസ്ഥിതിസംരക്ഷണത്തിൽ വലിയ പങ്കുവഹിച്ചി

രുന്നതായി കാണാം. മരങ്ങളിലും മലകളിലുമൊക്കെ ഈശ്വരസാന്നിധ്യം കണ്ട് പ്രകൃതിയെ ഉപാസിച്ചുപോന്ന പ്രാചീനജനസമൂഹങ്ങളുടെ കാഴ്ചപ്പാടുകൾ വനങ്ങളുടെ സംരക്ഷണം കൂടിയാണ് ഉറപ്പുവരുത്തിയിരുന്നത്. കേരളത്തിലെ കാവുസംസ്കാരം ഇത്തരുണത്തിൽ പ്രത്യേകം സ്മരണീയമാണ്. കന്യാവി ശുദ്ധിയോടെ കാടിന്റെ നിഗൂഢസൗന്ദര്യം നിലനിർത്തിപ്പോന്ന കാവുകളോ രോന്നും നിബിഡവനങ്ങളുടെ ചെറുപതിപ്പുകളായിരുന്നു. യന്ത്രസംസ്കൃതി യുടെ ആസുരവേഗങ്ങൾക്കും പരിഷ്കാരക്കുതിപ്പുകൾക്കും മുന്നിൽ കാവു കൾ മിക്കതും ഓർമ്മകളായിക്കഴിഞ്ഞിട്ടുണ്ടെങ്കിലും ദുർബലപ്രതിരോധമു യർത്തി ഇപ്പോഴും ചില കാവുകൾ അവശേഷിക്കുന്നതിനു പിന്നിൽ നാടോടി വിശ്വാസപാരമ്പര്യങ്ങളുടെ പിൻബലം പ്രകടമാണ്. ഉദാഹരണത്തിന് പെരുമ്പാ വൂർ നഗരമധ്യത്തിലാണ് ഇരിങ്ങോൾ കാവ് സ്ഥിതി ചെയ്യുന്നത്. നഗരത്തിലെ കോൺക്രീറ്റ് വനത്തിനുനടുവിൽ 50 ചതുരശ്ര ഏക്കർ വിസ്തൃതിയിൽ പവിത്ര മായ ഈ ചെറുവനം നിലനിൽക്കുന്നതിനുപിന്നിൽ കാവിൽഭഗവതിയുമായിബ ന്ധപ്പെട്ട നാടോടിപുരാവൃത്തസഞ്ചയത്തിനും നല്ല പങ്കുണ്ട്. കാവു തീണ്ടല്ലേ മക്കളേ, നാടുമുടിയുമെന്നു തുടങ്ങിയ നാടൻ ചൊല്ലുകളിൽ ആത്മീയവിധി ബോധങ്ങളുടെ വിശ്വാസതലം മാത്രമല്ല, പരിസ്ഥിതിവിജ്ഞാനത്തിന്റെ ജീവ ശാസ്ത്രവും പ്രതിഫലിച്ചിരുന്നുവെന്നതാണ് യാഥാർത്ഥ്യം.

മണ്ണും മനുഷ്യനും തമ്മിൽ നിലനിന്നിരുന്ന വിശുദ്ധമായ പാരസ്പര്യ ത്തിൽ വിള്ളൽ വീഴ്ത്തിക്കൊണ്ടാണ് അധിനിവേശവും ആധിപത്യവാഴ്ച കളും കടന്നുവന്നത്. അധിനിവേശസംസ്കൃതിയിൽ (Dominator Culture), പ്രകൃതി മനുഷ്യന്റെ മാത്രം വളർച്ചയ്ക്കും സുരക്ഷിതത്വത്തിനും ഉപയുക്തമാ കേണ്ട ഭൂമികയാണ്. വെട്ടിപ്പിടിച്ചും വെല്ലുവിളിച്ചും കീഴ്പ്പെടുത്തേണ്ട പ്രതി യോഗിയായി പ്രകൃതിയെ കാണുന്നതാണ് മനുഷ്യകേന്ദ്രിതമായ വികസനപരി പ്രേക്ഷ്യത്തിന്റെ രീതിശാസ്ത്രം. കുന്നിടിച്ച് വയൽ നികത്തിയും സ്വാഭാവികജ ലപ്രവാഹഗതികളടച്ചും കടലോരം കയ്യേറിയുമൊക്കെ മനുഷ്യൻ നടത്തുന്ന ദ്രവ്യാർത്തിപൂണ്ട പരാക്രമങ്ങളിലെല്ലാം പരിസ്ഥിതി വിരുദ്ധമായ പ്രകൃതി വീക്ഷണമാണ് പ്രകടമാകുന്നത്. ശാസ്ത്രീയമെന്നു കരുതുന്ന ആധുനികകൃ ഷിസമ്പ്രദായങ്ങൾ തന്നെ മനുഷ്യനും പ്രകൃതിയ്ക്കും സമ്മാനിക്കുന്ന ദൂരവ്യാ

പക ദൂഷ്യഫലങ്ങൾ വളരെയേറെയാണ്. ജേർഡ് ഡയമണ്ടിനെയും , റേച്ചൽ കേഴ്സണിനെയും പോലുള്ളവർ കാർഷികരംഗത്ത് മനുഷ്യൻ പ്രകൃതിക്കു മേൽ ചെലുത്തുന്ന ഭയാനകാക്രമണങ്ങളെക്കുറിച്ച് പ്രതിപാദിച്ചിട്ടുള്ളവരാണ്.

പ്രകൃതിയെ അപരത്വമായി (Otherness) കാണുന്ന ആധുനിക അധിനിവേശസിദ്ധാന്തങ്ങൾ ഏല്പിക്കുന്ന ആഘാതങ്ങൾ ഭൗതികപ്രശ്നങ്ങൾക്കു മാത്രമല്ല, മാനസികപ്രശ്നങ്ങൾക്കും കാരണമാകുന്നുണ്ട്. മണ്ണും മരങ്ങളും മഴയും നിലാവും പുഴയും പൂക്കളുമൊക്കെയായി ഇണങ്ങിക്കഴിയാൻ പാകത്തിൽ രൂപപ്പെട്ട മാനസികപ്രകൃതിയാണ് മനുഷ്യന്റേത്. ഈ സംയോഗാത്മക അസ്തിത്വദർശനത്തിന് "Biophilia" എന്ന വിശേഷണമാണ് Edward O. Wilson എന്ന പണ്ഡിതൻ നൽകുന്നത്. ബയോഫിലിയ സിദ്ധാന്തം പ്രകൃതിയും മനുഷ്യനും തമ്മിലുള്ള പാരസ്പര്യത്തിന്റെ പ്രസക്തിയും പ്രാധാന്യവുമാണ് വ്യക്തമാക്കുന്നത്. 1960 കളിൽ എറിക് ഫ്രോം ആണ് ഈസിദ്ധാന്തം അവതരിപ്പിച്ചതെങ്കിലും എഡ്വേർഡ് വിൽസനാണിതിന് വലിയ പ്രചാരം നല്കിയത്. ബയോഫിലിയ എന്നത് പ്രപഞ്ചത്തിന്റെ ജൈവവ്യവസ്ഥയെ ആദരിക്കാനും സ്നേഹിക്കാനുമുള്ള മനുഷ്യമനസ്സിന്റെ അദമ്യമായ ത്വരയാണ്. ആധുനിക ഭൗതികപ്രശ്നങ്ങൾ സൃഷ്ടിക്കുന്ന സംഘർഷങ്ങളെയും സമ്മർദ്ദങ്ങളെയും ലഘൂകരിക്കുന്നതിന് ബയോഫിലിയ സാധ്യതകൾ പ്രയോജനപ്പെടുത്തേണ്ടതുണ്ട്. പരിസ്ഥിതി സംരക്ഷണത്തിലും ദൂരവ്യാപക ഗുണഫലങ്ങൾ സൃഷ്ടിക്കാൻ ഇതിനു കഴിയും.

പ്രകൃതി വിരുദ്ധമായ വികസനസങ്കല്പലങ്ങൾ മനുഷ്യന്റെ മാത്രമല്ല, ഇതരജീവജാലങ്ങളുടെയും ഭൂമിയുടെ തന്നെയും നിലനില്പ് അപകടത്തിലാക്കിയിരിക്കുന്നുവെന്ന തിരിച്ചറിവ് പാരിസ്ഥിതിക ഫോക് ലോർ പഠനങ്ങളുടെ പ്രസക്തി വർദ്ധിപ്പിക്കുന്നുണ്ട്. കാലാവസ്ഥാ വ്യതിയാനങ്ങളുടെ അപകടഭീഷണിയെക്കുറിച്ച് മുന്നറിയിപ്പ് നല്കിയ ഐക്യരാഷ്ട്ര സെക്രട്ടറി ജനറൽ അന്റോണിയോ ഗുട്ടെറസ് 2018 സെപ്തംബറിൽ പറഞ്ഞത്, മനുഷ്യരാശി വിനാശകരമായ ഒരു വലിയഗർത്തത്തിന്റെ അരികു ചേർന്നാണ് കടന്നുപോകുന്നതെന്നാണ്. സമീപകാലത്ത് കേരളത്തിലുണ്ടായ പ്രളയദുരന്തത്തെ അദ്ദേഹം

തന്റെ പ്രസംഗത്തിൽ എടുത്തു പറയുകയുണ്ടായി. പ്രകൃതി ദുരന്തങ്ങളിൽ ഭവനരഹിതരായി ലക്ഷക്കണക്കിനാളുകളാണ് ലോകത്തിന്റെ വിവിധഭാഗങ്ങളിലായി അഭയാർത്ഥികളായി നിത്യേനയെന്നോണം പലായനം ചെയ്തുകൊണ്ടിരിക്കുന്നത്. അത്യന്തം വിനാശകരമായ ഇത്തരം സമകാലിക പാരിസ്ഥിതിക പ്രശ്നങ്ങളുടെ പശ്ചാത്തലം പരിസ്ഥിതി ഫോക്‌ലോർ പഠനങ്ങളുടെ പ്രസക്തി വർദ്ധിപ്പിക്കുന്നു. പ്രകൃതിയും മനുഷ്യനും തമ്മിലുള്ള പാരസ്പര്യവും ജൈവബന്ധവും പുന:സ്ഥാപിക്കുന്നതിൽ പരിസ്ഥിതി ഫോക്‌ലോർപഠനത്തിന് നിർണ്ണായകസംഭാവനകൾ നല്കാനാവുമെന്നതിൽ സംശയമില്ല.

ഗ്രന്ഥ സൂചി

1. സി.ആർ രാജഗോപാലൻ, ഫോക് ലോർ സിദ്ധാന്തങ്ങൾ, കേരള ഭാഷാ ഇൻസ്റ്റിറ്റ്യൂട്ട്, തിരുവനന്തപുരം, 2007.
2. ടി.ടി ശ്രീകുമാർ, കടലറിവുകൾ (എഡി) ഡി.സി ബുക്സ്, കോട്ടയം, 2004.
3. കുമാരൻ വയലേരി, ഭാഷയും, സമൂഹവും, പുസ്തകഭവൻ, പയ്യന്നൂർ 2010
4. ജോസ് പാഴൂക്കാരൻ, കാപ്പിമൂപ്പന്റെ-കാടനുഭവങ്ങൾ, കൈരളി ബുക്സ്, കണ്ണൂർ 2011.
5. സി. ആർ രാജഗോപാലൻ, ഗോത്രകലാവടിവുകൾ, നാട്ടറിവു പഠനകേന്ദ്രം, തൃശൂർ 2001
6. സോമൻ കടലൂർ, കടൽ ഓർമ്മകൾ, ഗ്രീൻ ബുക്സ്, തൃശ്ശൂർ, 2017
7. Abhramas, Roger D., Everyday life : A Poetics of Vernacular Practices Philadalphia, University of Pennsylvania, USA, 2005.
8. Edward O. Wilson, Biophilia, Haward University Publicaion, USA, 2003.

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A book

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RL Ashley. In Laboratory Diagnosis of Viral Infections, 3rd ed., Marcel Dekker, New York, 1999; pp. 489-513.

A thesis

Author's Initials Surname. MSc/PhD/DSc thesis, University (town, country, year of publication).

RJ David. PhD thesis, Edinburgh University (Edinburgh, UK, 1998).

Patents

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