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## A Novel Ideology: Dissecting the Plants Should Follow the Same Fate as the dissection of Animals are banned in Undergraduate Classes

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### Abstract

Living organisms are made up of animals and plants. For the prevention of cruelty towards animals, so many laws are enforced. Similar to animals, plants are also living beings and have similar structure and feelings. For preventing the cutting of trees, so many laws are there. On the same line of idea of stopping the dissection of animals, the idea of stopping the dissection of plants is mooted.

**Keywords:** Animals, plants, dissection, university grants commission, pharmacy council of India.

### 1. Introduction

The Earth is comprised of living organisms and non-living things. Nature has wonderful living organisms and beings like animals and plants; as well as non-living things like deserts, mountains, oceans, forests, hot springs, cold ice north and south poles, ice mountains and rivers etc. Biology is the branch of science, which deals with the study of living organisms and beings. Living Organism/ Being have cellular organization and perform various activities like growth, reproduction, metabolism, homoeostasis, interact with surroundings and adapt to changes in surrounding environment. The fundamental order of any living organism structure is cell-tissue-organ and organ system.

### 2. Differences between Animal Cell and Plant Cell

**2.1 Cell Wall:** Animal cells do not have a cell wall. Plant cells have a rigid cell wall, which surrounds plasma membrane.

**2.2 Size:** Animal cells are mostly smaller than plant cells.

**2.3 Vacuole:** Animal cell contains many small vacuoles, while the plant cell contains a larger central vacuole.

**2.4 Plastids:** Plastids are absent in animal cell and present in plant cell.

**2.5 Centrioles:** Centrioles are present in animal cell and helps in cell division. Centrioles are absent in plant cell.

**2.6 Position of Nucleus:** In animal Cell, nucleus is present in the centre, but in plant cell nucleus is present on one side in the peripheral cytoplasm.

**2.7 Biochemicals Synthesis:** Animal cells do not synthesize various amino acids, co-enzymes and vitamins but plant cells synthesize most of the amino acids, co-enzymes and vitamins.

**2.8 Reserve Food:** Animal cells store glycogen and fat. Whereas plant cells store starch and fat.

### 3. Similarity between Animals and Plants

#### 3.1 Contribution of Sir Jagadish Chandra Bose

Sir Jagadish Chandra Bose was the famous Indian Scientist, who proved by experimentation that both animals and plants have so many common things. He showed that similar to animals, plants are also sensitive to heat, cold, light, noise and various other external stimuli.

Sir Jagadish Chandra Bose invented an instrument named Crescograph, which could record and observe minute responses due to external stimulants. It magnifies the motion of plant tissue to about 10,000 times of their actual size.

Sir Jagadish Chandra Bose had proposed and proved that similar to animals, plants also have life and they are as living as human beings. They have similar expressions. They respire. They also have cells, tissues, reproductive system and hormones, have made up of protein, carbohydrate, fats. They also require oxygen, water and the sunlight for their survival. Few exceptions are like anaerobic plants. Similar to animals, plants also reproduce asexually or by sexual reproduction. Plants also have vessels (xylem) in which water and minerals flow. Plants also have tubes (phloem) in which food travels.

#### 4. Dissecting the animals is banned in undergraduate classes

**4.1** For last around 100 years, animal dissection is an integral part of zoology/ life sciences curriculum. With passage of time, as on date, the number of courses, institutes, students increased manifold. More than a million students study various courses, in which dissection of animals is required. Most of these animals are wild animals, which are caught from their wild natural habitats. Their removal from the wild natural habitats disrupts the biodiversity and ecological balance. Many species have entered into the category of threatened species. Frog is one such case.

**4.2** The reason for banning the dissection of animals in undergraduate classes, is cruelty towards animals in dissection of animals. This ban would replace the use of animals such as mice, rats, guinea pigs, frogs, cockroaches, rabbits and calves, who are commonly used to train pharmacy students. In undergraduate pharmacy courses, animals encounter various painful experiments like burning animals' feet, electrocuting them, inducing convulsions in them and killing them. The animals are living organisms, just like human being. Dissection processes bring pain, agony and discomfort to the experimenting animals. This inhuman brutality towards fellow animals, which are living on this earth with human beings, must be stopped and this banning the dissection of animals is a step in that direction.

**4.3** As per Government efforts, each institution conducting dissection of animals must constitute the Committee for the Purpose of Control and Supervision of Experiments of Animals (CPCSEA) under the provision of Section 15 of the Prevention of Cruelty to Animals Act (PCA) 1960 and rules for breeding of and experiments on Animals (Control and Supervision); 1998 and as amended in 2005 [1].

**4.4** As per chapter 4 of the PCA act 1960, there is a rule 17(d) [2] which states that the "experiments on animals are avoided wherever it is possible to do so; as for example, in medical schools, hospitals, colleges and the like, if other teaching devices such as books, models, films etc. like CD's, computer simulation, manikin, models, *in-vitro* methods are available.

**4.5** University Grants Commission, New Delhi issued guidelines for discontinuation of dissection and animal experimentation in zoology/life sciences in a phased manner, with the acquisition of appropriate technology and the development of human resources for the same.

**4.6** Similarly The Pharmacy Council of India had also issued

guidelines to various Pharmacy Colleges from time to time. As per PCI guidelines animal experiments should be replaced by computer aided modules and the routine use of all animals need to be stopped in undergraduate classes [3].

On the basis of suggestions of various government bodies, the dissection of animals is banned in undergraduate classes.

#### 5. Dissecting the plants should be banned in undergraduate classes

With the development is heading north, this world is becoming more and more of a jungle of concrete and iron instead of jungle of green plants. More and more trees are uprooted in the name of making furniture, doors, windows, as a fuel etc.; as well as developing the land in the name of dams, industrial factories, residential flats, educational institutes etc.

Lot of movements is initiated by people of India, to protect the environment, green forests. Let's discuss in brief about those movements:

**5.1 Bishnoi Movement:** It was started 400 years ago by a Sage known as Sombaji. In Rajasthan the people resisted the cutting of the trees & advocated movement against deforestation.

**5.2 Chipko Movement, 1973:** Chipko movement in the Garhwal Himalayas was started by Chandni Prasad Bhatt and Sunderlal Bahuguna. It was a people's revolt against mindless deforestation. They simply do it by hugging trees when the woodmen came to axe them,

**5.3 The Silent Valley Project, 1978:** The Silent Valley hydroelectric project was to dam the Kunthipuzha River, submerging the entire biosphere reserve and destroying its four-million-year-old rainforests. In 1980, the M.G.K. Menon Committee set up to review the project, came out with a recommendation to scrap it.

**5.4 Jungle Bachao Andolan, 1980:** The tribals of Singhbhum district of Bihar started a protest when the government decided to replace the natural sal forests with highly-priced teak, a move that was termed 'a greed game, political populism'.

**5.5 Navdanya Movement, 1982:** Navdanya Movement 1982 was started by Vandana Shiva. She started an organization, Navdanya, which promotes biodiversity conservation and organic farming. The organisation has not only helped create markets for farmers, but also promoted quality food for consumers, connecting the seed to the cooked food.

**5.6 Appiko Movement, 1983:** Appiko means 'hugging' in Kannada. This movement is started by Panduranga Hegde and men, women and children of Salkani area of Uttara Kannada district of Karnataka State in southern India in September 1983. They "hugged the trees" in Kalase forest. This movement was on the same lines of the Chipko movement (Hug the Trees Movement) in Uttarakhand in the Himalayas.

**5.7 Narmada Bachao Andolan, 1985:** Started by Medha Patkar, Baba Amte and Arundhati Roy, it is one of the largest and most successful environmental campaigns. Narmada Bachao Andolan questions the very rationale of large dam projects in India.

Besides these movements, lot of other movements was there to

protect the green forests at the macro level. All these movements will be a failure if we do not support these types of movements with our efforts at micro levels. At the micro level, we have to take care of cutting of plants at small levels. This is similar to saving Water or Electricity. Each drop of water and each watt of electricity consumed for lightening the bulb is important. The wastage of each drop of water and lightening of each bulb, wherever not required, should be avoided.

Similarly the conditions discussed above related to dissection of animals are fit case to be considered for similar action regarding dissection of plants for education and research and other purposes. Plants are dissected in a Botany branch of Biology. Over a period of time, there is a tremendous increase in number of institutes, students and various courses, where dissection of plants is required. If this extensive and indiscriminate dissection of plants continued at such a fast pace, many useful plants will come in the category of rare species. Moreover, similar to animals, plants also feel pain, agony and discomfort when a blade is used for making Transverse Section (T.S.), whether, it is root or stem or leaf or any other part of plant.

On the similar lines of prevention of cruelty towards animals, some organizations (NGOs.) should rise to save plants from extinction. To further learning purpose on the same guidelines for animals, newer simulation techniques like, CDs, computer programmes, films, models, charts etc. should be developed for demonstration. We and so many Governments and Non-Government Organizations strongly pitched for Green Earth Campaign. On the same lines, it is the need of the hour to save our precious herbs, shrubs and trees from the cruel hands of dissection.

## **6. Conclusion**

For stopping the dissection of animals, so many efforts are done by many Governments and Non-Government Organizations, it is the need of the hour that plants should be treated at par with other living animals and cruelty towards plants should be minimized by stopping the dissection of plants. But still we have to go miles and miles to bear some fruitful results.

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