



Analysing the Ethical Aspect of Genetic Modification of Livestock in India

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ABSTRACT

After the tremendous response from the Genetic Food market, the focus has shifted from plants to animals. Researchers around the globe glorify the need for genetic modification of livestock so as to have customised things from animal products. Genetic modification (GM) is not nascent in the animal industry and has been in use since Pasteur's time. Undertaking GM with regard to animals is not easy. Regulatory practices all around the globe are stringent, and few of them ban such genetic modification. Although there is no law in India presently regulating animal gene modification, it certainly won't be illegal if gene experimentation takes place. In this analysis, an attempt is being made to understand the ethical consideration of Genetic modification of livestock. The focus is largely on the impact of such modifications on the animals and the use of scientific techniques undertaken to do the genetic modification. It shall consider the international conventions and deliberate on the need for genetic modification.

Introduction

The dividing block between animals, plants and humans are the Deoxyribonucleic acid, DNAs of an entity that distinguishes one organism from another. DNA is hereditary material found in every plant, animal and humans. They form the genetics of the organism and are transmitted from one generation to another generation¹. There are certain animals which share the same DNA as that of humans. That is the reason they have been used so frequently for chemical tests and other reaction tests. Humans share 98.8% DNA of the Great Ape, monkeys about 93%, Mice 90%, Dogs 84% and chickens 84%². Gene modification of the animals is done when these DNA's are altered, and DNA of another organism is added. Through that manner, the DNA of the original animal gets completely changed.

The Royal Society, in its study, has established/ various reasons for the intended purpose of genetic modification. These include³:

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¹What is DNA? Genetics Home Reference, available at: <https://ghr.nlm.nih.gov/primer/basics/dna> (last visited on 26th September, 2018)

²Animals that share Human DNA Sequences, available at: <https://education.seattlepi.com/animals-share-human-dna-sequences-6693.html> (last visited on 18th June,2021)

³Alphey – The use of genetically modified animals, available at: https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2001/10026.pdf (last visited on 18th June,2021)



1. To research on the diseases which can be contracted by humans
2. To produce consumer goods (fibre and other purposes)
3. To create hypo-allergic pets to enhance animal interaction with humans.
4. To enhance the production or food quality traits (cow producing more milk, faster-growing fish etc.)
5. For improving animal health and making them resistant to diseases
6. To produce products for therapeutic use (pharmaceutical products or membrane for implantation)

Various animals have been used recklessly by organisations in the name of improvising science and giving it a boost up, but rather it is a mockery of nature. Although not all gene modification is to be repudiated, there are still live examples which illustrates the reckless use of money, time and energy in varying the genes of animals. For instance, scientists in Russia are looking at splicing human genes into the mice and getting the mice to produce milk containing lactoferrin, a naturally occurring protein in humans that provides bacterial and fungal protection and lacks artificial formula. The scientists want to expand the research into other animals like goats and cows, which produce milk⁴. Mutation of goats with spider which has been altered to include DNA which provides curious milk that can be dried and spun into spider-like silk⁵.

Scientists in China and UK have genetically modified pigs to produce 24% less fat than normal pigs⁶. This was done by inserting a gene in the pig, which enables them to regulate their temperature and burns fat⁷. Through this manner, there is a decrease in the fat percentage. This took the researchers a period of seven years. Out of the 33 piglets which were born, only 8

⁴Twelve extreme animal modifications in the name of science, *available at:* <https://www.popsci.com/science/article/2010-11/ten-ways-scientists-are-customizing-animals> (last visited on 21st June, 2021)

⁵ Id.

⁶Bacon may have just got healthier *available at:* <http://www.independent.co.uk/life-style/health-and-families/gm-pigs-less-fat-bred-scientists-genetically-modified-meat-a8018641.html> (last visited on 20th June, 2021)

⁷ Id.



survived⁸. Scientists in New Zealand, genetically engineered a cow which does not produce the whey protein, BLG⁹.

Gene modification requires tonnes of investment and is time-consuming. We aren't even sure if the result will materialise. Dolly, the first sheep, was modified by way of cloning for producing genetically modified livestock. Scientists also wanted to learn during experimentation how skin or brain neurons could be used to create a new animal. Her cloning involved a cell used from Finn Dorset sheep (mammary gland) and an egg cell taken from a Scottish Blackface sheep¹⁰.

According to Food and Agriculture Organisation, 9.5% of the emission of methane is being attributed to the fart of cows. Scientists at Pennsylvanian State University are considering genetically modifying the bacteria in cow guts, which will let the farmers focus on maintaining the cows that live long and ensuring that fewer cows die¹¹.

Glo-fish is an aesthetically rich fish in which the composition of the fish was changed, and florescent colours were added during the embryonic stage. As the embryo would develop, the fish would have all the features of a regular fish but would be florescent in appearance. They are very appealable, and their sale in the US rapidly increased. But there's another deception in their appearance; many Glo-fish would die if they were brought to home from the store¹². Many would also die if there is any change in the temperature and water. Although Glo-fish was genetically modified, it could not adapt in a new environment¹³.

AquAdvantage salmon is considered one of the most successful gene mutations in which gene forms a Pacific Chinook salmon and ocean pout were added to the Atlantic salmon's 40,000

⁸The Superpowers of genetically modified pigs, available at: <https://www.the-scientist.com/notebook/the-superpowers-of-genetically-modified-pigs-64513> (last visited on 18th June,2021)

⁹Ian Sample & science correspondent, GM cow designed to produce milk without an allergy-causing protein, available at: <https://www.theguardian.com/science/2012/oct/01/gm-cow-milk-allergy-protein> (last visited on 22nd June,2021)

¹⁰ The life of Dolly, Available at: <https://www.ed.ac.uk/roslin/about/dolly/facts/life-of-dolly> (last visited on 26th September,2018)

¹¹ Canada is using genetics to make cows less gassy, Available at: <https://www.wired.com/story/canada-is-using-genetics-to-make-cows-less-gassy/> (last visited 23rd June, 2021)

¹² R/Aquarium – Neon Goldfish Dying in new tank, Available at: https://www.reddit.com/r/Aquariums/comments/18spvp/neon_glofish_dying_in_new_tank_details_in/ (last visited on 23rd June,2021)

¹³ Id.



genes, which enable it to grow around the year instead of during spring and summer¹⁴. It is considered to be the first animal that is considered to be fit for human consumption. This was done so as to the fish grows without affecting the size and the quantity. The fish size increases in a short span of time, around 3-4 weeks instead of 18 months¹⁵. The experiment took around 20 years to bring the fish to the market. The eleven-member of the FDA could not determine the impact of bred salmon on the health of the consumer and the environment¹⁶. The only conclusion which they came was with regard to the expenses which are to be incurred in its breeding and also the regulation of the health of the salmon, as they are comparatively weaker than a salmon¹⁷. Many independent studies carried observed that the fishes were safe for human consumption¹⁸. AquAdvantage salmon is one of the most used Genetically modified organisms for human consumption¹⁹. There have been no studies which showcase the negative impact of GM on the life of a human.

Ethical Consideration of Genetically Modified Animals

Jeremy Bentham's Theory of Utilitarianism is considered to be the foremost in jurisprudence. The theory contends that any action is permissible when it produces a greater amount of happiness in society. However wrong may the action be, the good which the act brings should be encouraged by the people.²⁰ Considering the situation of animals all around the globe, they are still considered to be 'goods' or 'chattels' which can be traded by the people and which would do exactly as what is perceived by the man.

The ethical consideration of the animal moves from the duty of the people in recognising the animal as an organism capable of judging itself and deciding what is good for the health of the animals. As Rukmani Devi would say, "*Animals cannot speak, but can you and I not speak for them and represent them? Let us all feel their silent cry of agony and let us all help that cry to*

¹⁴Robert N. M. Ahrens & Robert H. Devlin, *Standing genetic variation and compensatory evolution in transgenic organisms: a growth-enhanced salmon simulation*, 20 *TRANSGENIC RESEARCH* 583–597 (2011)

¹⁵ Our Salmon Aqua Bounty Technologies, Available at: <http://aquabounty.com/our-salmon> (last visited on 26th September, 2018)

¹⁶FDA Panel Unable to reach conclusion on genetically altered salmon, Available at: <https://abcnews.go.com/Health/WellnessNews/fda-unable-reach-conclusion-genetically-modified-salmon/story?id=11682586> (last visited on 22nd June, 2021)

¹⁷ Id.

¹⁸ Id.

¹⁹Company says FDA is nearing decision on genetically engineered Atlantic salmon, Available at: <http://www.washingtonpost.com/wp-dyn/content/article/2010/08/01/AR2010080103305.html> (last visited on 22nd June, 2021)

²⁰The History of Utilitarianism, Available at: <https://plato.stanford.edu/archives/win2014/entries/utilitarianism-history/> (last visited 22nd June, 2021)



be heard in the world”²¹. People for Ethical Treatment of Animals (PETA) spells out that 90% of the animal tests that go around in the world cause no benefit either to the research or the animal community²². The report also suggests that The National Institute of Health spends 12 billion dollars every year for research which goes waste²³. The amount of money spent on research and testing ranges from 115.3 million to 126.9 million on non-vertebrate animals²⁴.

The Genetically modified plants also created a spur when they were introduced. Europe was against the method of employing biotechnology, but apparently, after a WTO decision, it decided to regulate the trade of GM food. Although the GM food may cause higher yields, the impact on the health and environment cannot be ignored²⁵. The GM soy caused an allergic reaction to the people who consumed it. There is no way in which we can determine the impact of GM food on a person’s body²⁶. Hence, it creates more problems to people who eat only a variant of food. A similar application can also be made for the GM animals. Although there is no research available determining the impact of these animals on the environment and the people, this might create a situation in the future if GM animals are used as food. When GM Potato variant was checked on rats, the rats died after ten days owing to organ damage²⁷. An independent study studied by a Harvard student, after monitoring for 20 years, has concluded that GM food may not cause alteration of DNA of humans²⁸, but the same has not been proved for the animals.

Genetic modification of cows has also been proven to be successful. In China, the cloning of two cows has resulted in spicing up the flavour of the beef. The money spent on the milk used

²¹ Rukmini Devi Arundale Quotea-Z Quotes, Available at: <https://www.azquotes.com/quote/587445> (last visited on 15th June, 2021)

²² This AD Spells it out: Animal Tests are going Nowhere, Available at: <https://www.peta.org/blog/experiments-on-animals-fail-90-of-the-time-why-are-they-still-done/> (last visited on 21st June, 2021)

²³ Id.

²⁴ Animal Research is Hazardous Waste, Available at: <https://www.neavs.org/campaigns/environment> (last visited on 22nd June, 2021)

²⁵ Genetically Engineered foods may cause rising food allergies (Part One), Available at: <https://responsibletechnology.org/genetically-engineered-foods-may-cause-rising-food-allergies-part-one/> (last visited 18th June, 2021)

²⁶ Eliot M. Herman, *Genetically modified soybeans and food allergies*, 54 JOURNAL OF EXPERIMENTAL BOTANY 1317–1319 (2003)

²⁷ Will GMOs Hurt my Body? The Public’s concerns and how scientists have addressed them, Available at: <http://sitn.hms.harvard.edu/flash/2015/will-gmos-hurt-my-body/> (last visited 17th June, 2021)

²⁸ Id.



for feeding the calves is around 7,000 yuan (\$1101.1)²⁹. The scientist also noted the fact that it will around ten years to know the impact of the use of biotechnology on the human life³⁰.

The process by which animals undergo genetic modification has a larger health impact on the animals. Many of the animals die, and the surgery or the procedure may not be very successful. When Dolly was cloned, researchers found out that there were more harms than benefits when cloning animals. Their development is delayed; lung infection, hormonal imbalances and strokes are the common animosities which these animals suffer from³¹.

Scientists do a lot of trial and error in creating a model by replacing the gene of an animal. For example, researchers may assume that removing a receptor gene for thrombin (a blood-clotting enzyme) in mice will affect their control of blood coagulation, but only by creating the animals can they discover that such a deletion causes half of the altered embryos to bleed from multiple sites so that they die in the womb³². This might not create any benefit, but rather a lot of resources are wasted when it does nothing substantial for improvement of the living condition of animals.

Since there is no surety that any gene modification of the animal would cause a difference to the people, the scenario may be altered when chemical testing of the animal takes place, and humans consume the same. Chemicals used on animals would certainly impact the life of the humans too. The chemicals used by the companies in research are used for various steps in the process like: sanitation, sterilisation, animal care, analgesia, anaesthesia, euthanasia, and research and testing procedures³³.

Thus, this causes a dilemma for understanding the ethical aspiration of genetically modified animals. The first international agreement on the protection of animal rights was the Universal Declaration on Animal Rights which affirms the view that the animals are sentiment beings

²⁹ GM Calves bred to beef up flavour, Available at: <http://www.globaltimes.cn/content/726991.shtml> (last visited on 18th June, 2021)

³⁰ Id.

³¹ Gina Kolata, *Researchers Find Big Risk of Defect in Cloning Animals*, Available at: <https://www.nytimes.com/2001/03/25/world/researchers-find-big-risk-of-defect-in-cloning-animals.html> (last visited June 20, 2021)

³² Animals and Genetic Engineering – Unlimited Cruelty, Available at: <https://www.all-creatures.org/articles/animalsandge.html> (last visited June 20, 2021)

³³ Supra note 20



and their welfare is necessary³⁴. The Supreme Court of India also affirmed the need of the Right to life in the case of Animal Welfare Board of India vs. A. Nagaraja³⁵. The Apex Court held that ‘every species has a right to life and security.’

“Article 21 of the Constitution, while safeguarding the rights of humans, protects life and the word “life” has been given an expanded definition and any disturbance from the basic environment which includes all forms of life, including animal life, which are necessary for human life, fall within the meaning of Article 21 of the Constitution. So far as animals are concerned, in our view, “life” means something more than mere survival or existence or instrumental value for human beings, but to lead a life with some intrinsic worth, honour and dignity.”

The court also stressed on the need of Article 51A(g)³⁶ and (h)³⁷, which casts a duty on every person to have compassion.

Position in USA and EU

Genetically modified animals are not banned in the US. Their philosophy is that animal health, safety and other regulations should be regulated and complied with rather than the process by which they come. GMO’s in the US are favourable to the economy as it is an essential component of the biotechnological industry³⁸. With respect to animals, the Food and Drug Administration (FDA) regulates the New Animal Drugs (NADs). A NADA for a GE animal must include information on the animal’s identification; chemistry; clinical purpose; labelling; components and composition; manufacturing methods, facilities, and controls; safety and effectiveness; environmental impact; and other information. In the European market, the GM animals are not allowed to be imported and cannot be produced in the country. But the trend is now changing. The European Food Safety Authority (EFSA) has published its guidance report in 2013, where it would be checked on to place GM animals in the EU market. The Environmental Risk Assessment, which is undertaken, involves the collection, generating

³⁴ Universal Declaration of Animal Welfare,
Available at: <https://www.globalanimallaw.org/database/universal.html> (last visited on 18th June,2021)

³⁵ Civil Appeal No. 5387 of 2014

³⁶ Article 51A(g) of the Constitution of India, 1950 reads as: *to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;*

³⁷ Article 51A(h) of the Constitution of India, 1950 reads as: *to develop the scientific temper, humanism and the spirit of inquiry and reform;*

³⁸ Restrictions on genetically Modified Organisms: United States,
Available at: <https://www.loc.gov/law/help/restrictions-on-gmos/usa.php> (last visited on 18th June,2021)



information of a GM animal, impact on the environment, impact on the health of the animal as compared to non-GM animals³⁹.

Does Section 3 of The Prevention of Cruelty to Animals Act (PCA) contain genetically modified animals?

Section 3 of the PCA, 1960 reads as:

“It shall be the duty of every person having the care or charge of any animal to take all reasonable measures to ensure the well-being of such animal and to prevent the infliction upon such animal of unnecessary pain or suffering”.

Since the Act came in the year 1960, genetically modified animals were not anticipated, nor has there been any amendment yet in the definition. Since the definition talks about ‘any animal’, it is construed to also include genetically modified animals though there is no interpretation of the same by any High Court or the Supreme Court. It is also submitted that the decision by the Nagaraja judgement will also extend in giving protection to the GM animals.

Legal Framework on Genetically Modified Food in India

The Cartagena Protocol on biosafety provides safe handling, transfer and use of the GM organisms of the genetically modified organisms was signed by India. It provides for the sheltered treatment of the genetically engineered or modified organisms. It is in addition to the United Nations Biodiversity Convention signed at Rio de Janeiro on 29th of June 1992, which came into force on 29th of December 1993. Its aim is the conservation and sustainable use of biological diversity.⁴⁰ According to the Principle 15 of the Rio Declaration on Environment and Development, 1992, new technologies and innovations must be founded on the Precautionary Principle, which is basically a new guideline that is used in the process of deciding in relation to the environment.⁴¹

Despite the fact that the Genetic Engineering Approval Committee has guidelines and protocols for testing the safety of genetically modified crops, but none exists for genetically modified animals.⁴² There is no regulation in India relating to the genetic modification of livestock. A

³⁹EFSA Panel on Genetically Modified Organisms (GMO), “Guidance on the environmental risk assessment of genetically modified animals: Guidance Document on the ERA of GM animals “, 11 *EFSA JOURNAL* 3200 (2013)

⁴⁰Ashwini Siwal, “Genetic Technology and Regulatory Regime in India”, Available at: <http://www.journal.lex-warrier.in/2012/05/13/genetic-technology/>

⁴¹The Precautionary principle in environmental science, Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240435/> (last visited on 18th June, 2021).

⁴² Ibid.



protocol is a set of guidelines that detail how field trials must be conducted. They elaborate on which tests must be conducted and what bio-safety aspects must be accounted for.

The World Health Organisation defines GMO as:

“GMOs are organisms (plants, animals or microorganisms) in which the genetic material (deoxyribonucleic acid or DNA) has been altered so that it does not occur naturally by mating and/or by natural recombination”.

They are produced as a result of genetic engineering technology, also known as ‘modern biotechnology’ or ‘recombinant DNA technology,’ which allows the transfer of selected individual genes from one organism to another as well as between organisms of non-related species such as the transfer of genes from bacteria to a plant.⁴³ Therefore, the term genetically modified organisms include genetically modified animals as well as livestock. Hence, the laws relating to the genetic modification of the organisms have been dealt with.

Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989:⁴⁴ Genetically Modified Organisms in India are governed by these Rules. They are framed under Sections 6⁴⁵, 8⁴⁶ and 25⁴⁷ of the Environmental Protection Act, 1986. These Rules are enforced by the following organisations:

- Ministry of Environment and Forests
- Department of Biotechnology of the Ministry of Science and Technology

Non-compliance and violation of the Rules, 1989 attract punishment under the Environmental Protection Act, 1986. These Rules provided for the establishment of six authorities for the implementation of these rules:

⁴³World Health Organization. 2014 : Frequently asked questions on genetically modified foods, *available at*: http://www.who.int/foodsafety/areas_work/food-technology/faq-genetically-modified-food/en/ (last visited on June 18, 2021).

⁴⁴Notification 5th December, 1989; Ministry of Environment & Forests, *available at*: <https://moef.gov.in/en/project-approvals/geac-clearances/genetic-engineering-appraisal-committee-geac-clearances-notification-archieve/>

⁴⁵Section 6: Rules to Regulate Environmental Pollution; Environmental Protection Act, 1986.

⁴⁶Section 8: Persons Handling Hazardous Substances to Comply with Procedural Safeguards; Environmental Protection Act, 1986

⁴⁷ Section 25: Power to Make Rules; Environmental Protection Act, 1986



- **Recombinant DNA Advisory Committee (RDAC):**⁴⁸ The Committee functions as an advisory body reviewing the advancements in biotechnology at national and international level and suggests safety regulations for the same in India to recombinant research, use and applications time to time. The Committee works under the Department of Biotechnology.
- **Review Committee on Genetic Manipulation (RCGM):**⁴⁹ This Committee is established under the Rules to work under the Department of Biotechnology, Ministry of Science and Technology to ensure the safety-related aspects with respect to ongoing research and guidelines specifying procedures regulating the process of genetic modification of organisms in research and development for environmental safety.
- **Institutional Bio-Safety Committee (IBSC):**⁵⁰ The Committee is set up under the institution which deals with Genetic Modification of Organisms, research to manage such research and to interface with the RCGM in regulating it.
- **Genetic Engineering Approval Committee (GEAC):**⁵¹ It is set up under the Ministry of Environment and Forest, which is the apex body to accord release under Rules 1989 for the approval of research in large-scale use of hazardous organisms and recombinants from the environmental perspective. The GEAC is in charge of the proposals which relate to the genetically modified organisms and other products into the environment, which is inclusive of the experiments in the field trials.
- **State Bio-Safety Coordination Committee (SBC's):**⁵² It plays a significant role in monitoring genetic modification of the organisms. It has the power to review, examine, investigate and take punitive measures in the case of genetically modified organisms.

⁴⁸ Rule 4(1) Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989

⁴⁹ Rule 4(2) Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989

⁵⁰ Rule 4(3) Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989

⁵¹ Rule 4(4) Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989

⁵² Rule 4(5) Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989



- **District Level Committees (DLC's):**⁵³ District Level Committee plays a crucial role in monitoring the security controls in establishments occupied with the utilisation of genetically modified organisms and their applications in the environment.

Rules 1989 are supplemented by the bio-safety guidelines, which are made through a consultative methodology and following the global standards made by the Organization for Economic Co-operation and Development (OECD), CODEX Alimentarius Commission and International Plant Protection Convention (IPPC).⁵⁴

The Ministry of Health and Family Welfare is responsible for monitoring the quality and safety of food marketed in India under the Prevention of Food Adulteration Act, 1954. The Indian Council of Medical Research is an advisory body on GM Foods. The Ministry of Food Processing Industries is engaged with going in new directions for the Research & Development of food processing industries.

The Food Safety and Standards Act of 2006: It examines the effect of food on the health of the human being. The definition of “*food*” in the Food Safety and Standards Act, 2006 includes Genetically Modified (GM) food.

“Food means any substance, whether processed, partially processed or unprocessed, which is intended for human consumption and includes primary food to the extent defined in clause (zk), genetically modified or engineered food or food containing such ingredients, infant food, packaged drinking water, alcoholic drink, chewing gum, and any substance, including water used into the food during its manufacture, preparation or treatment but does not include any animal feed, live animals unless they are prepared or processed for placing on the market for human consumption, plants, prior to harvesting, drugs and medicinal products, cosmetics, narcotic or psychotropic substances:

Provided that the Central Government may declare, by notification in the Official Gazette, any other article as food for the purposes of this Act having regards to its use, nature, substance or quality.”⁵⁵

⁵³ Rule 4(6) Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989

⁵⁴Genetic Engineering Approval Committee, ministry of environment and forests, government of India, Available at: <http://www.moef.nic.in/division/genetic-engineering-approval-committee-geac> (last visited on 11th June,2021)

⁵⁵ Section 2(j) of Food Safety and Standards Act, 2006



After the enacting of the Food Safety and Standards Act in 2006, the GEAC needed to limit itself to the approval of living modified organisms (LMOs) and move this to the FSSAI, for which a notification was issued in 2007. Accordingly, the Ministry of Health and Family Welfare (MoHFW) requested the Ministry of Environment and Forests to regulate the processed foods until the time FSSAI gets ready to do so in a scientific way.

The notification was kept in abeyance until 2016, making the GEAC in charge of approving processed foods, with no responsibility of the FSSAI practically speaking regardless of Section 22 of the Food Safety and Standards Act, 2006 (FSS Act) stating that GM foods shall not be manufactured, sold, distributed or imported until the FSSAI approves them. Then, in 2013, the Legal Metrology (Packaged Commodities) Rules, 2011, were amended to order that packages containing genetically modified foods bear the words ‘GM’ on its display board. This rule is in conflict with the fact that GM foods are not allowed in India and, in fact, created the false perception that GM food was allowed.⁵⁶

Section 22 of the Food Safety and Standards Act, 2006 says that no individual will make, appropriate, offer or import any genetically modified food except provided under the statute. The FSSAI and the MoHFW said that it had not approved any GM food. This implies that all imported and domestically manufactured GM food available locally in the Indian market is illegal.

According to Rule 6(7) of the Legal Metrology (Packaged Commodities) Rules, 2011, each package containing genetically modified food shall bear at the top of its principal display the words ‘GM’. This makes a false impression that GM food is lawful in India.

In February 2018, the Union Minister, MoHFW, on being questioned about the vacuum in regulation of GM food, said that:⁵⁷

- Genetically Engineered Organisms (GEOs) or LMOs, would first require approval from the GEAC, would keep on first require endorsement from the GEAC for ecological security and after that require the endorsement of the FSSAI for sustenance well-being.

⁵⁶ Chandra Bhushan, Amit Khurana, et.al., *Genetically Modified Processed Foods in India—Need to Curb Illegal Sales in the Indian Market* (Centre for Science and Environment, New Delhi, 2018)

⁵⁷ Lok Sabha Starred Question 117 on 9 February 2018, available at: <http://164.100.47.194/Loksabha/Questions/Otextsearch.aspx>



- Food or processed food containing GM ingredients produced from GM ingredients but not containing LMOs or GEOs would also require approval of FSSAI.
- No standards for GM foods have been set down by the FSSAI. However, even without particular guidelines for GM foods, according to Section 22 of the Food Safety and Standards Act, 2006, GM foods are not permitted to be produced, transported in or sold in India. The FSSAI's new draft labelling regulation of March 2018 means to address the issue through the labelling of GM foods.

Labelling of GM foods in India

According to Section 22 of the Food Safety and Standards Act, GM food is illegal until FSSAI approves it, which it has not done till now. The FSSAI has, as of late, proposed the draft FSS (Labelling and Display) Regulations, 2018, which additionally tries to make marking of GM nourishment compulsory. These directions have not been determined yet. The regulation provides, 'all food products having total Genetically Engineered (GE) ingredients 5 per cent or more shall be labelled. The total GE ingredients shall be of the top three ingredients in terms of their percentage in the product.'⁵⁸

FSSAI pointed that it is the process of finalising the draft Food Safety and Standards (Labelling and Display) Regulations that says that an organisation needs to make an affirmation on the label if its food products have 5 % or more amount of ingredients which are genetically engineered or modified.⁵⁹ In December 2017, the FSSAI notified the Food Safety and Standards (Organic Foods) Regulations, which regulates organic food fundamentally through certification and labelling.

⁵⁸ Id. At 56.

⁵⁹James Rachels, "Do animals have a right to liberty?" in Animal Rights and Human Obligations, Reagan, T. and Singer, P. (eds.), *Animal Rights and Human Obligations*, 13 (Prentice-Hall Publishers, New Jersey, 1989).

**Conclusion**

“The right not to be tortured is shared by all animals that suffer pain; it is not a distinctively human right at all.”⁶⁰ It is submitted that there is an ethical dilemma regarding the nature of Genetically modified animals in India. Although various animal right activists and various international organisations are working towards banning the alteration of the genes of the animals, still they find a way in the industry, and people are yet to find the same in their supermarkets. It is also submitted that there is a need for stringent regulation for GM animals in India because there is no law which prohibits even the import of these animals. It should also broaden the scope of The Prevention of Cruelty to Animals Act. Hence, the Government should try to balance the interest of the community with those of the animals and create a pathway in which the rights of animals are protected.

⁶⁰ Id.