15

Intellectual Property Rights with Special Reference to Fisheries

Kajal Chakraborty
Senior Scientist, Marine Biotechnology Division,
Central Marine Fisheries Research Institute, Ernakulam North P.O.,
P.B. No. 1603, Cochin-682018
E-mail: itmucmfri@gmail.com

Introduction

Intellectual property rights or Intellectual Property Rights (IPRs) are rights given to people over the creations of their minds. IPRs, which connote the rights available for the protection and exploitation of technology for the benefit of patentee, society, and government, occupy an important place in today's world. Intellectual property safeguards the rights of an inventor in his invention, and at the same time facilitates social and economic growth by providing an impetus to the advancement of science and technology. Unlike Fundamental Rights of citizens which are guaranteed by the Constitution of a country, IPRs are statutory rights enacted by the lawmaking authority in a country. With the development of new technologies a balance between the private rights and public interests need to be implemented, and there born the intellectual property system. The first intellectual property system came in from the West with the industrial development for the past four centuries. Through these years, IPR has converted from feudal power to people's private rights.

Types of Intellectual Property Rights

Intellectual property rights are divided into three main areas:

(1) Copyright and Rights Related to Copyright

The rights applied to authors of literary, dramatic and artistic works (such as books, publications and other writings, musical compositions, paintings, sculpture, computer programs and films). The main social purpose of protection of copyright and related rights is to encourage and reward creative works. The agreement says performers must also have the right to prevent unauthorized recording, reproduction and broadcast of live performances for no less than 50 years.

ii) Industrial Property

Industrial property includes:

- Trademarks (distinguish the goods or services of one undertaking from those of other undertakings), and geographical indications (identify a good as originating in a place where a given characteristic of the good is essentially attributable to its geographical origin).
- The trademarke protection may last indefinitely, provided the sign in question continues to be distinctive.
- Patents, industrial designs and trade secrets are the industrial properties used to stimulate innovation, design and the creation of technologies. The protection under these categories is usually given for a finite term (typically 20 years in the case of patents).

Trademarks

Trademarks are any sign or combination of signs capable of distinguishing the goods or services of one undertaking from those of the other. TRIPS Agreement provides initial registration and each renewal for a term not less than 7 years and shall be renewable indefinitely. CMFRI has trademarks on "Preparation and filing of trademark registration application of mark Cadalmin" under class 31 (Food for fish, seeds) and "Preparation and filing of trademark registration application of mark Cadalmin" under class 35 (Trading and Marketing). The official registration of trademark 'CADALMIN' was done in the office of the registrar of Trademarks, India, Chennai.

Geographical Indications

Geographical Indications identify a good as originating in the territory, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin. Like TM, GI is a form of IPR used in product marketing, and is represented in words, figures, graphics, diagrammatic presentations or any specific combination of these indications.

Industrial Designs

Industrial Designs are protected for at least 10 years. The owners of protected designs must be able to prevent the manufacture, sale or importation of articles bearing or embodying a design, which is a copy of the protected design.

Patents

The patent law recognizes the exclusive right of a patentee by law to gain commercial advantage out of his invention with an idea to encourage inventors to invest their intellectual knowledge, knowing that no one else would be able to copy their

inventions for a certain period. The term of a patent in India is 20 years from the date of filing. However, for patents granted pursuant to applications filed under the PT, the term of 20 years begins from the international filing date. Patent protection is available for both products and processes. Patents provide the necessary incentive for inventors to undertake capital intensive projects knowing that they will receive the exclusive rights to profit from their inventions once they secure patents in respect of the inventions. The patentee also has the right to assign the patent, grant license, "or" otherwise deal with the patent, for any consideration (Article 28 of the Trade Related Intellectual Property Rights or TRIPS Agreement). The TRIPS Agreement is part of the "single undertaking" resulting from the Uruguay Round negotiations. This implies that the TRIPS Agreement applies to all WTO members, mandatorily. It also means that the provisions TRIPS agreement introduced intellectual property rules into the multilateral trading system for the first time and laid down minimum standards for protection and enforcement of intellectual property rights in the member countries.

At the end of the Uruguay Round of the General Agreement on Tariffs and Trade in 1994, the TRIPS agreement was implemented to regulate standards of IP regulations in WTO member countries. The Uruguay Round introduced IP rights into the multilateral trading system for the first time through a set of comprehensive disciplines. Being a member of the WTO and a signatory to the TRIPS agreement, it is compulsory for India to formulate its IP regulations to comply with the TRIPS agreement. TRIPS is intended to maximize the contribution of IP systems to economic growth through accelerating trade and investment.

(iii) Sui generis Systems

A "sui generis" system is a Latin expression, simply means "one that is of its own kind". In this case it refers to the creation of a new national law or the establishment of international norms that would afford protection to intellectual property dealing with genetic resources -or biodiversity - and the biotechnology that might result. It also refers to a law that might protect creations, inventions, models, drawings, and designs, innovations contained in images, figures, symbols, petroglyphs, art, music, history and other traditional artistic expressions. The diversity of the subject matter is one of the reasons why a sui generis system is not advisable, but there are other reasons as well.

Patents, industrial designs, integrated circuit designs, geographical indications and trademarks have to be registered in order to receive protection. Patents right, like all other rights conferred under this agreement in respect of the use, sale, importation or other distribution of goods, is subject to the provisions of Article 6. The registration includes a description of what is being protected-the invention, design, brand name, logo, etc. This description is for public information.

Types of Patent Applications

Standard Application

This is the most common type of application filed and does not refer to another application to claim priority. Standard application may be made with provisional or complete specification.

Patent Cooperation Treaty (PCT) Application

Patent Cooperation Treaty (PCT) is an international filing system for patents entered into force in 1978. India is a member of PCT. It is of note that India joined the PCT on December 7, 1998. The unified procedure for filing patent application under PCT grants an international filing date (priority date) in member countries. Later, the applicant can go to the national offices within 3 years without affecting the priority date. All activities related to PCT are coordinated by the World Intellectual Property Organization (WIPO) situated in Geneva. Indians can file PCT International Application either in Indian Patent office or in the WIPO. In order to protect any invention in other countries, it is required to file an independent patent application in each country of interest; in some cases, within a stipulated time to obtain priority in these countries. Inventors of Contracting States of PCT on the other hand can simultaneously obtain priority for their inventions without having to file separate application in the countries of interest; thus saving the initial investments towards filing fees, translation etc. In addition the system provides much longer time for filing patent application in member countries. The time available under Paris Convention for securing priority in other countries is 12 months from the date of initial filing. Under the PCT, the time available could be as much as minimum 20 and maximum 31 months. The inventor could also opt for preliminary examination before filing in other countries to be doubly sure about the patentability of the invention. The patent office or any other office designated by each Contracting state becomes a receiving office for receiving PCT patent applications. These applications are referred to International Searching Authorities (ISA), which usually the patent offices, appointed to carry out the patent search on a global basis. In case the receiving office is also an ISA, a separate referral is not required.

Divisional Application

When there is more than one invention is disclosed in main application, a divisional application can be filed. Divisional Application gains priority date of the main application.

Application for Patent of Addition

An application for patent of addition is filed when there is a modification or addition of already patented invention or application, within the term. In this connection it is to be noted that separate renewal fee is not required for patent of addition, and can be made independent to avoid the expiry of which with the main patent.

IPRs with Special Reference to Fisheries

Technologies in the fisheries can receive protection by patents, trademarks, geographic indications, and copyright, and design. These technologies receive protection by one or a combination of different IPRs depending upon the nature of technology (Ravishankar and Archak, 2000). Given the vast and unexplored potential of utilization of aquatic resources, the increasing trend in biotechnological patents in the developed countries, patenting of aquatic genetic resources will have an increasing trend in times to come. The use of aquatic resources has a significant potential in pharmaceuticals, nutraceuticals, high value compounds/chemicals, cosmetics and food.

The TRIPS agreement represents the existing global state of IPR standards and legally binds all its member countries. It is the only agreement amongst several multilateral agreements under WTO which have significant impacts on global trade (Maskus, 2000). The key element of the TRIPS agreement for the agricultural and fisheries sector is the requirement for WTO members to make patents available for any inventions in the sector. The most important article in the agreement when considering the agricultural (fisheries subject is included under agriculture) sector is Article 27, which state the patentable and non-patentable subject matter. According to the TRIPS agreement India had to provide legal protection to farmers' traditional knowledge (including that of fisheries) via patents or by an effective *sui generis* system or by both, by 2006. However, the agreement provides for each country to determine and adopt a suitable procedure to implement the provisions of the agreement within its legal system and practices. Developed countries like US and UK have adopted well-built IP regimes using strong patent systems in fisheries and agriculture sector, in general. The main reason for developed countries to choose patents for protection is due to their technological capabilities and the immense financial benefits that a patent system is expected to generate (Holger, 2001). Whereas, developing countries like India has weak regimes due to lack of financial and technical support. Most of the developing countries have faced several difficulties in protecting inventions related to fisheries which mainly attribute to lack of strong rules and regulations.

Improved breeds/ strains of fish cannot be protected in India as patents or variety protection. As per Section 3j of Indian Patents Act, no living organism as a whole obtained from nature can be patented. As per Indian Patent Act, Section 3(j), plants & animals in whole or any part thereof other than GMO and essentially biological processes for production or propagation of plants and animals are not patentable in India. However, IPA allows for patenting whole organisms like transgenics, with human intervention. National Bureau of Fish Genetic Resources (NBFGR) has been identified as a nodal institute to develop a system to register and document valuable fish genetic resources by ICAR. The registration system will bring elite germplasm into public domain to promote its use in research. However for elite fish genetic material in the public domain, there is no IPR enabling provision under the existing Indian laws nor is there any provision for the registration and documentation of the breeds and strains of fish developed by ICAR. To check their misuse or exploitation, "ICAR will develop a system of their registration and documentation, at the respective National Bureaus of Animal and Fish Genetic Resources for quickly placing them through disclosure in the public domain thereby forestalling any

unforeseen patenting in other countries ….and to establish a system of their registration and documentation. It will suitably extend the existing system to register and document the elite and new breeds/strains of fish developed in ICAR, at the National Bureau of Fish Genetic Resources (NBFGR)" (ICAR, 2006).

In recent times among the Indian organizations, CSIR along with other private industries are the major patent applicants in India and US, the rest of patent applicants are foreign individuals. There is also lack in continuity in patenting activity for the last four decades from 1920-1950 in the field of aquaculture. However, in recent years (after 1996) there are incremental trend in patent filing in ICAR institutes including fisheries. Among fisheries, a maximum of 55% of patents have been granted in the field of processing technology followed by 24.5% in fishing technology and about 21% in aquaculture. Among fish processing technology, about 43% of the patents granted to the foreign nationals, and about 15% to CSIR in the subject area of extraction and isolation of polysaccharides and protein from marine organisms, fish oil originated fat liquors, alkaloid from sponge etc. In post WTO era (1996-2000), the average number of patents granted in fisheries discipline is six in a year. Increasing awareness for patent search engines/sites, access to patent information, and the comparatively easier administrative procedures in the amended patent laws are among various reasons for increased patenting activity. In aquaculture too, the majority of patents (45%) granted in India are to the foreign nationals (Ninan et al., 2005). Since the innovations in processing technology can be varied easily in the process patent application area, and are easily imitable towards various directions, there appeared to be greater trend to incline for processing technology in fisheries subject. Importance of processing technologies with respect to export and trade in and outside India also are the reasons that hold the edge towards patent application in India as compared to other subjects in fisheries like aquaculture, machinery or fishing technology. This is also an example that demonstrates the fact that process patents provides stimulus for dynamic competition wherein the same product is manufactured by different processes. The patents on method for obtaining carrageenan, chitin, phycocyanin, and products from spirulina, polyunsaturated fatty acids, bioactive compounds, alkaloids and other bioprocessed products. In recent times seaweeds and marine plants have been identified as valuable resources to isolate bioactive molecules for use against different diseases. However, this area is vastly unexploited and after implementation of the product patent regime in 2005, research and patenting activity in this sector could rise.

It is of note that around 46% of the total patents granted in fisheries sector during the post WTO era (1996-2002) are in processing technology. A total of 27.93% of patents applications related to water treatment, waste water treatment, power and electricity generation from sea waves, river bank protection, manganese nodules, purification of microbes in water, etc., whereas 14% of patent applications relate to aquaculture, and about 12% patent applications relate to fishing technology.

Marine Fisheries and IPR

Earth's surface covers more than two-thirds water with five large oceans, which offer an ecosystem for the growth of various forms of lives with unique properties, which

are generally not present in the terrestrial ecosystem. Historically marine ecosystem and marine biodiversity benefited mankind through direct and indirect economic benefits and industrial means. However, there is a high degree of representation of terrestrial-derived bioproducts, but the number of patents that have found their way into IP protection from marine origin is thus far small.

Marine organisms have various biotechnological applications in the area of health, environment and mariculture. As compared to terrestrial ecosystem very meager is known and explored from marine environment probably because of the difficulty in reaching the depths. The areas of patenting in marine fisheries sector includes the technologies and methodologies in fishing, processing, and aquaculture/mariculture (with intervention), pharmaceuticals, nutraceuticals, cosmetics, food and feed, bioactive compounds, etc. Central Marine Fisheries Research Institute pioneered in shaping a number of IP protected technologies and their commercialization, which are of direct or indirect benefits to the society and mankind. The technologies have been developed in marine fisheries in India for land-based culture of pearls, fish strains, packages of improved marine finfish and shellfish husbandry practices, natural resource management technologies, improved tools including cage culture technology for open sea fish farming, technologies for making nutraceuticals and value added products, and several other processes and products related to fisheries sector, some of which have been safeguarded by patents. A patent protected product Cadalmin™ Green Mussel extract (Cadalmin™ GMe) containing anti-inflammatory principles from *Perna viridis* to combat joint pain, arthritis/inflammatory diseases developed by CMFRI as an effective green alternative to the synthetic drugs available in the market (Indian Patent Appl. No. 2065-2066/CHE/2010). CMFRI has taken the lead to develop a nutraceutical supplement with concentrated anti-inflammatory principles as Cadalmin™ Green Algal extract from seaweeds for use against joint pain and arthritis (Indian Patent Appl. No. 2064/CHE/2010). Design, development and propagation of open sea cage device for cultivating marine fishes along the coastline of India (Indian Patent Appl. No. 31/CHE/2010), cutting edge mariculture technologies of food fishes such as cobia (*Rachycentron canadum*), silver pompano (*Trachinotus blochii*) and *Etroplus* sp are some of the success stories of marine fisheries and CMFRI. CMFRI showed the way of land-based culturing of pearl oyster in marine body (Indian Patent Appl. No. 1543/CHE/2009), open sea green mussel and oyster farming, hatchery technology for production of ornamental fish (Indian Patent Appl. No. 3455/DEL/05), edible clams, sea horse, mass scale spat production of green mussel, artemia selective breeding to impart high value traits for use in mariculture (Indian Patent Appl. No. 2063/CHE/2010), biotechnological interventions to control fish diseases and maintain fish health, probiotics, bioprospecting beneficial microorganisms for aquaculture grade antiboiotic substitute, biocatalysts from beneficial bacterial flora (Indian Patent Appl. No. 203/CHE/2008), PCR kits to manage various fish diseases, gene mining technologies for various important traits, cost effective and rapid duplex PCR kit for early detection of white spot syndrome virus of shrimp, phytoplankton culture and algal biotechnology, production process for sea cucumber *Holothuria scabra* and *Holothuria spinifera* seeds or fingerlings, resource management of the Indian sacred chank, Xancus *pyrum* (=*Turbinella pyrum*) by breeding, nursery rearing and sea ranching, propagation of soft coral *Sinularia kavarattiensis,* fish aggregating devices (FAD), Cadalmin™ Varna (Indian Patent Appl. No. 32/CHE/2010) and Cadalmin™ Silo fish feed, capture based aquaculture of mullets and red snapper, lobster farming in floating

sea cages, mud spiny lobsters (*Panulirus polyphagus* fattening in sea cages), image pearl production, which are of direct use of the fish farming communities.

Conclusions

Fisheries in India are in need for strategic and proactive research based inventions to make the subject technically sustainable, environmentally friendly, economically profitable and socially relevant. With the fast changing fisheries scenario and emergence of aquaculture as an alternate approach for enhancing fish production, the fisheries in Indian context has tuned its mandate in consonance with the need of the time.

The patent system involves the balancing of competing interests. While patent holders seek monopoly rights to make, sell, and license the patented invention towards maximizing their profits, many consider this as detrimental to the interests of society as patentees have the discretion of charging their own prices for their products. While these misgivings might to true to an extent, in reality the society's interests are protected rather than derided by the patent system. As the inventions for which patents are granted are accompanied by an enabling disclosure, competitors often use this information to produce improved products and patent them. Their improved products being also accompanied by enabling disclosure, provides the necessary base for further improvements. Thus consumers benefit as the patent system automatically leads to an increased choice in the market and patent holders benefit *as* they can focus their energies on providing new and improved products based on the consumers' preferences.

Indian coastline is gifted with an enormous resources of valuables hidden into the depths of sea, and can be explored to develop products with valuable patent protected nutraceutical, pharmaceutical and biomedical products for human health and well being. In this connection it is essential to develop knowledge in IP and patent protection of technologies developed by the inventor(s). Intellectual property system safeguards the rights of an inventor in his invention/ intellectual richness while benefiting the end users and society as a whole. The IP system operates towards securing its objectives as follows: "…..protection and enforcement of intellectual property rights should contribute to technological innovation and to the transfer and dissemination of technology, for the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations." The purpose of an invention is to protect and encourage fair competition in the field of technology so as to transform inventions or creations into real and productive forces. Intellectual property is an important and effective policy instrument to a wide range of socio-economic and technological concern. It is to be remembered that the possession of a patent not only confers certain monopoly rights and privileges of the patented article, but certain obligations and duties also. Commercialization of IP-enabled technologies is an absolute necessity to transfer valuable technologies developed in the institute laboratories to the society for greater benefit of mankind.

Suggested Readings

Ayyappan, S., Moza, U., Gopalakrishnan, A., Meenakumari, B., Jena, J.K., and Pandey, A.K. (2011). Hanbook of fisheries and aquaculture. Indian Council of Agricultural Research, New Delhi. Published by Directorate of knowledge management in agriculture, ISBN 978-81-7164-106-2, 1116 pp.

Chakraborty Kajal (2013).
A perspective in marine fisheries and mariculture.
Publication under Institute Technology Management Unit, CMFRI, CMFRI Special Publication No. 108, ISSN: 0972 – 2351, 152 pp.

Correa, C.M. (1998). Intellectual Property Rights and Aquatic Genetic Resources. In Pullin, R.S.V., Bartley D.M. and Kooiman, J. (Eds.) Towards Policies for Conservation and Sustainable Use of Aquatic Genetic Resources. ICLARM Conference Proceedings 59.

Holger, E. (2001). Patent applications and subsequent changes of performance: evidence from time series cross section analysis on the firm level. *Research Policy*. 30 (1), 143-157.

ICAR. 2006. ICAR Guidelines for Intellectual Property Management and Technology Transfer/Commercialization. Indian Council of Agricultural Research, New Delhi

Maskus, K.E. (2000), Intellectual property rights in the global economy (Washington DC: Institute for International Economics).

Ninan, S., Sharma, A., Ananthan, P.S. and Ojha, S. N. (2005). Intellectual property rights in fisheries sector. *Journal of Intellectual Property Rights*. 10, 52-58.

Pal, P. (2008). Intellectual property rights in India. Regal Publications. P. 328.

Ravishankar, A. and Archak, S. (2000). Intellectual property rights and agricultural technology, interplay and implications for India. *Economic and Political Weekly*. 35 (27), 2446-2452.

Trivedi, P.R. (2008). Encyclopedia of intellectual property rights. Volume 1. Jnanada Prakashan (P&D) In association with Indian Institute of Intellectual Property Rights. New Delhi, P. 2614.

Trivedi, P.R. (2008). Encyclopedia of intellectual property rights. Volume 1. Jnanada Prakashan (P&D) In association with Indian Institute of Intellectual Property Rights. New Delhi, P. 3077.

WIPO, IP Statistics, http://www.wipo.int/ipstats/en/statistics/patents.

****