

E. Assessment

The TRIPs Agreement has had an enormous effect on the food sector with regard to patentability of food. Food-related inventions are now eligible for patent protection in most countries worldwide with the exemption of plant- and animal-related inventions. Plant varieties have to be protected at least by an effective *sui generis* system. The TRIPs Agreement led to an increase of food-related patent applications in developing countries, where food had often been excluded from patentability.

Brazil, China and India, before being Members of WTO and Parties to the TRIPs Agreement, had excluded food from patentability. China introduced the patentability of food in 1992, even before its WTO entry in 2001, Brazil did so in 1997 along with the ratification of the TRIPs Agreement and India in 2005 making use of the full transition period under Art. 65(2)(4) of the TRIPs Agreement. Plants and animals are excluded from patentability in Brazil and India using the room to maneuver under Art. 27(3)(b) TRIPs Agreement. China has excluded only animal species and plant varieties. Brazil, China and India have each established a plant variety protection system thus, meeting the requirements of Art. 27(3)(b) of the TRIPs Agreement. Brazil and China have adopted the UPOV Convention of 1978, whereas India has established its own plant variety protection system.

The idea that there is the necessity to prevent monopolies in the area of nutrition has led to the exemption to patentability of food in developing countries as well as in developed countries. The same reasons that led to the exemption in the German Patent Act of 1877 also led to the exemption in Brazil, China and India.

Two paradoxes dominate public opinion about the food sector. *Straus*²⁷⁹ summarizes the first anomaly with respect to the TRIPs Agreement and the patentability of food as follows:

"Whenever the impact of intellectual property rights, especially patents, on modern societies, be it developed or developing, is discussed, two topics dominate the debate: health and medicines, and the fact that the adoption of (...) (TRIPs) in 1994 will, eventually, oblige all (...) (WTO) Members to provide for patent protection for pharmaceuticals. Surprisingly, an equally important aspect of health, namely nutrition and food, and the TRIPs general obligation to patent food products, which before TRIPs in many countries had shared the fate of pharmaceuticals, i.e. had not been eligible for patent protection, is not even touched upon."

279 *Straus*, Genomics and the Food Industry: Outlook from an Intellectual Property Perspective, in: *Vaver&Bently*, Intellectual Property in the New Millennium – Essays in Honour of William R. Cornish, Cambridge 2004, 124.

Second, only patents concerning the production of agricultural raw materials, especially plant-related inventions, are discussed publicly. Patents concerning the production of processed food attract almost no public attention. Patents concerning the production of processed food are commonly accepted, like those in any other industrial sector. Genetically modified organisms play a major role in both the production of agricultural raw materials and the production of processed food. However, only genetically modified plants are on the focus of public discussion. Genetically modified microorganisms used in the production of processed food are not questioned at all.

The food sectors of Brazil, China and India are in different stages of the transition from subsistence farming to modern agriculture. At the same time, food prices have not increased as food sectors have generally prospered in all these countries. Patent applications on food-related inventions have almost doubled in Brazil and China since the introduction of patentability of food. This indicates that patents on food at least have no negative effects on the food sector and food availability in general. Along with an improved patent system, foreign direct investments have increased and foreign companies are willing to invest in developing countries. Consequently, developing countries profit indirectly from the minimum standards set by the TRIPs Agreement with regard to patents.

On the other hand, there is a strong deficit in patent enforcement. This deficit is more a practical than a legal one. So far, the TRIPs Agreement has ordered minimum standards for all WTO Members. But patent enforcement is difficult because of the absence of an effective legal system and judicature and weak sanction mechanisms in developing countries.