Fig. 2. 2.1: Tomatoes Flavr-Savr
2.2. GM melons of controlled maturation

Also, other variants of GM interventions have been described, acting on the synthesis of the hormone that induces maturation (ethylene), controlling the suppression of 1-aminocyclopane- 1-carboxylate synthase or oxidase (ACC-synthase or ACC-oxidase) enzymes with similar effects. This is how GM tomatoes and melons of controlled maturation have been obtained[9].

Foods with vitamins and hypoallergenic foods

It is well known that there no complete foods, valid statement particularly in the case of vegetables. Therefore, its intake has to be necessarily supplemented to meet the needs of the living being (proteins, lipids, carbohydrates, vitamins, minerals, etc.). The possibility of introducing genes that express some of the lacking elements of specific food can solve traditional problems linked to large geographic areas of the planet. This is what happens, for example, with rice, which is the basic diet (if not the only diet) of millions of people all over the world. Its traditional deficiency is vitamin A causing serious health problems, particularly sight problems (blindness)[4,2]. It has been described the obtention of GM rice with genes that express ß-carotene (provitamin A) solving this problem. Rice gets a brown tone explaining its name of "brown rice". It has also been explained the production of tomatoes with a gene that triplicates its content of ß-carotene[7]. This type of "reinforced" foods are also called "functional foods"[3]. Some people cannot consume some products due to their hypersensibility to some components that make them have allergic reactions. In this sense, in the case of rice, it has been described the obtention of a variant for genetic modification that drastically reduces the expression of albumin (protein) of 16 kDa (kilodaltons), a very allergenic one, which causes hypersensibility in some people. Also, in the case of soy, a protein called P34, known for its allergizing capacity, has been suppressed by inactivating the gene codifying for. For that purpose, a process called "gene silencing" consists of introducing extra copies of the gene that codifies for the P34 protein, having the plant responding with its suppression when interpreting it is an excessive replication originated by a viral infection[3].

Modification of Nutritional Quality

There are several studies that have helped to improve the composition of some traditional foods. They generally refer to one or some immediate principles (carbohydrates, proteins or fats) [2]. For example, when referring to **proteins**, there is the case of the albumin 2S gene of Brazil nut, particularly rich in methionine (one of the main sulfur-containing amino acids) which has been used as a donor to transfer it by genetic modification to soy, rapeseed and kidney beans. Nevertheless, the initial advantages resulted in inconveniences related to their inclination to hypersensibility (generation of allergies), making them exclusive for animal use. Genes that codify for other proteins rich in amino acids such as lysine, tyrosine, and cysteine, also of great nutritional relevance, have also been described[6].

In the case of **lipids**, genes that modify the composition of fatty acids that are part of triacylglycerols and phospholipids, two of the most biologically important fatty acids, have been incorporated. The same happens in the case of some polysaccharides like starch, modified by transgenesis, both its quality and quantity, on behalf of some plants[7].

Modifications to quality affecting clinical situations of the consumers

GM foods can help to prevent or correct critical situations of certain patients, particularly kids under not very favorable environmental and familiar conditions. In this sense, it is important to point out that recently, a team of Brazilian researchers achieved to transform corn plants making them produce human growth hormone (HGH). Today, the price of producing HGH, used to treat children with growth disorders, can reach the $20,000.00 per gram, while by using transgenesis techniques in vegetables, the costs decrease drastically (the first estimations calculate that from a ton of GM corn it can be obtained no less than 250 gr of HGH) [9]. The same team shared the success on the obtention of other GM corn plants that contain a gene that codifies a viral protein capable of eliminating the agent that causes avian coccidiosis (Eimeria spp), which leads to an interesting way of preventing avian coccidiosis by feeding these animals[1].

Methods to detect GM foods

Two general systems can be considered that show the GM condition of suspicious food. On one hand, there are procedures that detect new expressed proteins because of the introduced transgenes, and that is why there are methods that identify the DNA that corresponds to the gene or genes that were introduced[3].

Methods that detect new proteins

In the first place, one of the most common study procedures is the ELISA technique, a type of enzyme immunoassay where a known antibody facing a GM protein under investigation, get stuck to (get adhered to) the microplate where the analysis is been performed[15]. The sample is added to the plates and if there is a GM protein it will be recognized and detected by the specific antibody. By washing the material, any element not specified that has not been recognized by the antibody will