

EDIBLE FILMS AND COATINGS

Pollution of the environment by human waste is a topical issue nowadays. Plastic used for packaging food products makes up about half of all wastes, and that is the reason for scientists to develop new coatings and films which decompose without any emission of harmful substances. Therefore, edible films to package food have been made, and their advantage lies in the fact that they can be eaten or utilized without pollution. Presently, the main components of films are polysaccharides, proteins, fats, or a mixture of them all. Edible films are widely used in food chemistry in the USA, Europe, and China.

In this research, the investigation of producing biodegradable coatings and films suggested by Belarusian scientists will be considered.

One should take into consideration that coatings are not only used to cover foodstuff but can also be inflicted on the surface of the product. The main purpose of edible coatings is to protect food from air and moisture exposure and extend its expiration date. Belarusian chemists propose the following method to produce edible coatings: they combine corn starch with sodium alginate in water solutions and by “dry” molding (evaporation of solvent from a thin layer of solution) obtain durable films. The advantages of using corn starch as the base of films are its prevalence, biodegradability, and low cost. Solutions with different percentage of sodium alginate were used, and the scientists received films with various physical and mechanical properties. They investigated such properties as strength and elongation, solubility in hot and cool water, and viscosity of solutions.

Edible films on the base of other types of starch have also been investigated. As the low cost of the starting raw material is an important factor,

the most prevalent are the potato (Belarus, Poland) and the tapioca (Vietnam). In their research, chemists show the data of investigation of different physical and mechanical properties, such as durability of films and strength of starch solutions [2]. To produce durable edible coatings, various substances should be added like plasticizers, defoamers, soluble or insoluble fibers, and others. An important criterion is that these substances must be biodegradable and non-toxic for human health and correspond to GMP (good manufacturing practice) [3].

There is no production of edible films in Belarus. Some investigations are being conducted in laboratory conditions. However, a great potential of producing biodegradable coatings in our country might be seen as promising since Belarus can boast of corn and potato abundance. Furthermore, various nutritional supplements can be added to corn and potato both as foodstuff and edible coatings. Different products may be covered by this type of films like vegetables, meat, spices, and sweets to save their properties and give a more delicious taste. This branch of food chemistry is extensive and has many applications but the main challenge is to find an inexpensive alternative for plastic package [2].

References

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