

34. Creation of standardized, innovative drinks of therapeutic and prophylactic action with the addition of pectin

Oksana Lugovska, Vasil Sidor

National University of Food Technologies, Kyiv, Ukraine

Introduction. The beverage industry is demonstrating a constant increase in production, the appearance of new products on the market. In the assortment of soft drinks of therapeutic and prophylactic action, more attention is paid to beverages enriched with pectin substances.

Materials and methods. Technological recommendations have been developed using high-methoxylated fast pectin with DM (Degree of Methoxylation) more than 50%, and low methoxylated pectin with DM less than 50% in beverages with low juice content, as well as in beverages with sweeteners to restore the density and fibrous properties of beverages.

Results and discussion. As a result of research of raw materials for the production of pectins, namely citrus peel (lime, lemon, orange peel), it was established that the quantity and quality of pectins depends on ripening conditions, degree of ripeness and drying conditions of the peel. Extraction processes also affect the quality and quantity of pectin: extraction is a tradeoff between the total amount of extracted pectin and its quality.

Pectin is a water-soluble fiber that is added to the product to impart a sense of viscosity in the mouth, improve structure, fullness and enhance the taste, especially citrus drinks. Highly methoxylated pectin forms a gel at a high temperature and gives a quick cage. Because of these qualities, he received the name "fast pectin".

The main component of pectins is galacturonic acid, which belongs to the family of sugars. Several hundred molecules are joined together to form a long chain of polygalacturonic acid molecule. Parts of the galacturonic acid molecules are methoxylated and the number of methoxy groups affects the properties of pectin. The "degree of methoxylation" or DM (Degree of Methoxylation) is the average number of methoxy groups per 100 acid groups.

Pectin 70% DM is investigated - a product where 7 out of 10 acid molecules have a methoxy group. Like most hydrocolloids, it is very hygroscopic and therefore completely soluble in water in comparison with low methoxylated pectin, which dissolves in water longer and forms lumps. These lumps can be dry inside, and the outside is a swollen, hydrated shell that is not easily destroyed.

When using highly methoxylated pectin in a beverage technology, it is first dissolved in water using a stirrer at a high rotational speed, or the mixture of pectin and sugar is introduced with stirring into water at a temperature of 70-80 °C, brought to a boil and cooled. Use pectin solution immediately and completely in order to avoid a subsequent decrease in the enzyme or chemical reaction. Storing a solution of pectin is not only economically disadvantageous, but also affects the quality of the finished product, reducing the resistance of the gel.

Conclusions. We propose to use high methoxylated pectin with DM in excess of 50% in the production of beverages, as compared with low methoxylated pectin it has a more transparent color of the solution, more dissolving time in the solution, but more expensive. Pectin is genetically unmodified. The results of clinical research also show the effectiveness of the use of pectins in diseases associated with impaired lipid and hydrocarbon metabolism: diabetes, gastrointestinal diseases, liver disease, etc.