DETERMINATION OF FAT CONTENT OF MILK

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The installation for contactless express-registration of fat content of milk is proposed, which allows increasing the accuracy and reliability of the measurement.

The most active developments are in the direction of intensification and improvement of technological processes of dairy production, as well as increasing the nutritional and biological value of dairy products. According to the existing rules, the determination of the content of fat in milk is carried out by acid or optical method. A significant drawback of both methods is the complexity of the apparatus and a fairly long time of analysis and obtaining the result. In addition, a high qualification of the staff is required.

The purpose of the research is the development and implementation of a portable, cheap and reliable milk fat indicator, which is easy in using and allows you to measure milk fat in a short time. It is accessible to workers of milk-commodity farms.

The main research materials consist of an analysis of existing methods for determining the fat content of milk. The methods and the devises, that use microwave signals, have significant prospects for the dairy industry. At the same time, there are various structural variants of milk microwave sensors, which have both certain advantages and disadvantages.

On the basis of the analysis of existing methods, a high-frequency method has been chosen, which is based on the dependence between the quantities of the dielectric constant on the fat content of the milk. The milk fat content meter has been developed, which, due to the introduction of new elements and connections, provides the possibility of obtaining a proportional relationship between the measured voltage and the fat content of milk, which increases the accuracy and reliability of contactless express-registration of the fat content of milk. The linear dependence takes place at the measurement limit from 0.1 to 3% at an absolute measurement error not more than 0.05%. At the limit of measurements from 3 to 6%, the error becomes slightly higher, but does not exceed 0.1%.

The proposed fat milk meter has accuracy indicators not worse than those ones which are used in dairy production. In addition, it is easy to use and has a small size, and the most important that it is suitable for use in automatic processing systems for agricultural products.