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DETERMINATION OF THE TOTAL CONTENT OF POLYSACCHARIDES CONTAINED IN SILK LEAVES AND SILK WASTE

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Annotation
This paper presents a method for the determination of total polysaccharides in mulberry leaf and silkworm waste.

Keywords: Silkworm, waste, silk raw materials, polysaccharid, sugars, glycides, carbohydrate

Carbohydrates are a group of common organic compounds, along with proteins and fats, necessary for the life of human, animal and plant organisms. It is one of the sources of energy produced as a result of metabolism in the body. According to its properties, it is close to oxyaldehydes and oxyketones.

Polysaccharides form biopolymers consisting of monosaccharides. If polysaccharides contain the same monosaccharide, they are called homopolysaccharides, and if they contain different monomers, they are called heteropolysaccharides. In addition to these two large groups of polysaccharides, there are also polysaccharides found in bacteria and fungi that are fundamentally different from them. They belong to the class of heteropolysaccharides. Important physiological homopolysaccharides include starch and glycogen, while hyaluronic acid, chondrogen sulfate, and heparins can be cited as representatives of heteropolysaccharides. Starch consists of glucose residues from homopolysaccharides.

It is formed in the process of photosynthesis and accumulates in grains, roots and other parts of plants as reserve food. Starch consists of two different fractions according to its chemical composition: amylose 15-25% and amylopectin 75-85%. [1]

The substances contained in these carbohydrates must use the advantages of these properties and eliminate the disadvantages in order to increase the yield of

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cocoons. Cellulose is the most common organic substance in the plant world. Its amount in leaves is 15-30%, in wood 50-70%, in cotton fiber 90%. The name of this compound also means that it plays an important role in the structure of the cell (cellula is a Latin word that means cell). Cellulose is similar to amylose according to its structure, but the 1→4 bond in its molecule is in the form of.[2]

One of the features of spring worm feeding is to correctly correlate the development period (time) of the worm with the time of leaf maturity. If the worm is opened later, then the worm does not grow well because the mulberry leaf becomes coarse for the young worms, while the feeding of the adult worms is delayed until the hot summer time. As a result, worms begin to get sick, the yield of rilla is reduced, and its quality deteriorates.

When 1200 kg of leaves are given in the first stage of worm life, 35 g of leaves are given for 100 g of worms in a box. From this, 0.6 g of leaves will be consumed. In the second treatment, 100g of leaves are given for 100g of worms in a box. Of this, 1.7 g of leaves will be consumed. In the third treatment, 100 g of leaves are given for each worm in a 365 g box. Of this, 5.7 g of leaves will be consumed. In the fourth treatment, 100g of leaves are given for a worm in a box of 201g. 17g of leaves will be used. In the fifth period, 100g of leaves are given for a worm in a 900g box. 75 g of leaves will be used.[3]

It can be seen from this that silkworms consume 8% of their food in their first three years, and 92% in their old age.

The completeness of the food depends on the type of mulberry, the nutritional composition of the leaves and their condition (young, old). The leaves of mulberry varieties differ in their chemical composition. For example, nutritional content of mulberry leaves (N. Akhmedov, 1982-99 data) Carbohydrates in seedless mulberry leaf of Tajikistan 16.2%, 16.1% in folding mulberry leaf, 15.0% in grafted mulberry leaf , 14.2% in Uzbekistan mulberry leaves, and 13.8% in hybrid mulberry leaves. The satiety of the leaf is determined by the weight of rilla or the amount of silk obtained from 1 kg of eaten leaf.

We will consider the comparative analysis of the amount of food (mulberry leaves) used for reared silkworms in the district of Uzbekistan and the general analysis of waste from them. [4]

10 g of ground samples were taken in separate containers and placed in conical flasks. 100 ml of distilled water was poured over them. The samples in the flask were extracted in a MS7-H550-Pro magnetic stirrer at +250C for 3 hours. Then the mixtures were filtered (1st time) and 100 ml of distilled water was poured

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over these samples, and the 2nd time was extracted and filtered in the same order. Then, the analytical filtrate from the mulberry leaf extract and the waste filtrate were combined in separate containers. The obtained extracts were evaporated in a BIOBASE RE 100-Pro rotor evaporator at 800C (1 min/70 times) until a thick mass was formed.

As a result, 20 ml of thick mass remained from both analyses. Then they were poured with 96% ethyl alcohol in a ratio of 1:1 and shaken well. The resulting polysaccharides were precipitated in a DM0636 centrifuge (1 min/3000 times). The precipitates formed were separated and dried in a SNOL drying oven at 60 oC for 12 hours.

It can be seen that the total polysaccharide mass of 10 g of mulberry leaf sample was: 0.4151 g or 4.151%. The total mass of polysaccharide in the waste was equal to 0.5457 g or 5.457%. From the results, it can be concluded that the total mass of polysaccharides in the mulberry leaf is more than the total mass of polysaccharides in the waste. [5]

In summary, all stages of development of the mulberry leaf silkworm have the necessary substances. Since the chemical composition of the mulberry leaf varies greatly, its worm-retaining properties are not always the same. In addition to changing according to climate and soil conditions, as well as its age and species, the mulberry tree also changes under the influence of various agrotechnical activities carried out by man. The growth and development of silkworms, biological indicators, productivity, silk yield and quality depend on the quality of mulberry leaves. In turn, silkworm waste also contains carbohydrates.

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