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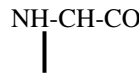
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A polypeptide chain is a spiral structure.



is formed from the repetition of the group, and if it is completely drawn, its base will have a zigzag shape (Fig. 1, b). The length of the chain can vary (from $15 \cdot 10^{-8}$), and the thickness of the base is $45 \cdot 10^{-11}$ m.

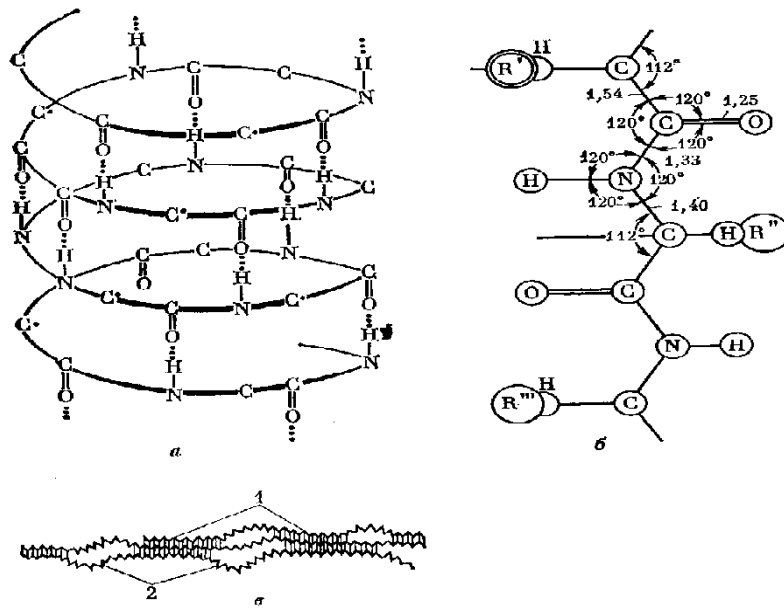


Figure 1. Polypeptide chain scheme:

- a. spiral structure; b. extended chain; v. location of the polypeptide chain in the fiber (1-crystal part; 2-amorphous part)

Fibroin is a relatively highly oriented substance with an oriented portion of 40-60% fiber mass. The side chains belong to some amino acids composed of R radicals, which make up 19% of the molecular mass. The length of the side chain reaches $12 \cdot 10^{-10}$ m. The nature of the side chains depends to a certain extent on the physicochemical properties of fibroin; the location of the isoelectric zone, the possibilities of solvation and hydration and, consequently, the melting and swelling, chemical activity, etc.

II. ANALYSIS OF EXISTING FILTERING MATERIALS AND RESEARCH RESULTS

Silk fibroin has a complex upper molecular structure, consisting of dense fibrils, the width of which is $65 \cdot 10^{-5}$ m across the fiber axis. Equivalent to the fact that they, in turn, clump together into a single spiral-shaped microfibrils. Swelling and melting. Fibroin is insoluble in alcohol, ether, petroleum ether, carbon dioxide and other organic solvents. It is insoluble in water, but has a certain amount of moisture absorption (hygroscopic) properties, resulting in a certain degree of swelling (30-40%). The moisture retention of pure fibroin is 1-2% less than the moisture retention of raw silk.

Development of a method for the separation of fibroin from cocoon shell and silk waste. The cocoon consists of expanding the range of silk products by separating fibroin from fibrous waste from spinning mills. The sericin-free cocoon shell is boiled in a 32% alkaline NaOH solution at 100°C for 15 minutes. The solution is then neutralized in H_2SO_4 acid to remove moisture from the substance. The moisture in the product evaporates at a temperature of 600°C . The finished product is powdered.

III. EXPERIMENTAL RESULTS

Acids and especially alkalis accelerate the swelling of fibroin. Fibroin swollen under the influence of alkaline solutions is irreversible. In solutions of hydrochloric and nitric acids, fibroin swells as if drowned in water. The cocoons are white in color and have different color tones. The presence of different color tones on the cocoon depends on their breed and hybrids. The study found the effect of cocoon colors on fibroin release.

Table 1
Release of fibroin from white and yellow cocoons

Types of cocoons	Fibroin content, %
White cocoon	75,59
Raw silk from white cocoon	76,20
Yellow cocoon	70,20
Raw silk from yellow cocoon	72,35

We can conclude from the result obtained. Fibroin production from white cocoons was found to be 5.3% higher than for yellow cocoons. However, fibroin output was found to be higher in raw silk than in cocoon shell. Different breeds and hybrids are grown across the provinces and they will have to adapt to the conditions of the provinces. In the study, the amount of fibroin in different hybrid cocoons was determined.

Table 2
Fibroin release in different hybrid cocoons

Cocoon hybrids:	Fibroin, %
Ipakchi-1x Ipakchi-2	76,36
Mechenniy-2 x Mechenniy-1	76,25
Uzbekistan-6	72,11

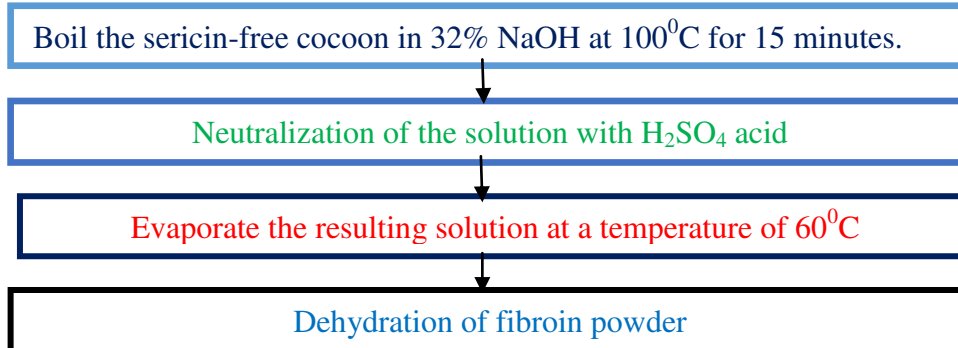
The results show that Ipakchi-1x was 76.36% of Ipakchi-2, Mechenniy-2 x Mechenniy-1 was 76.25%, Uzbekistan-6 was 72.11%. From this we can see that there are differences even in terms of hybrids. The cocoons are divided into varietal, non-varietal and non-standard cocoons according to the state standard. The study examined the release of fibroin from the twin cocoon shells of two types, 1st grade and non-grade.

Table 3
Fibroin output by cocoon varieties

Cocoon varieties	Fibroin content, %
1st new cocoon	76,24
A cocoon with a double dome	72,11

The results showed that 4.3% less fibroin was released from the new cocoons than from the new cocoons. In the extraction of fibroin from the cocoon shell, a new type of white cocoon belonging to the hybrid Mechenniy-2 x Mechenniy-1 was selected. The sericin-free cocoon shell was boiled in 32% NaOH at 100°C for 15 minutes. The final solution was neutralized in H₂SO₄ acid and the moisture content of the substance was evaporated at a temperature of 60°C. The finished product is powdered.

Sequential removal of fibroin from the cocoon shell



The obtained fibroin powder is well soluble in water. Demonstrates protein reactions. When fibroin content was checked: 7.01% water; 17.17% nitrogen; 1.35% of slaves were found.

IV. CONCLUSION AND FUTURE WORK

The yield of fibroin by the shade of the color of the cocoons showed 5.3% more in white cocoons than yellow cocoons. It was found that the yield of fibroin is higher in raw silk than in the shell of the cocoon. It was found that off-grade twin cocoons produced 4.3% less fibroin than grade cocoons. When isolating fibroin from the cocoon shell, 1 variety of white cocoon belonging to the Mechenniy-2 x Mechenniy-1 hybrid was selected. The resulting fibroin powder dissolves in water and exhibits protein reactions. When determining the content of fibroin, it was found that it contains 7.01% water, 17.17% nitrogen and 1.35% ash.

Due to the presence of alanine, glycine, arginine, lysine and tyrosines in the amino acid silk fibroin, it is recommended to use them in combination with drugs used in the treatment of heart, kidney and vascular diseases.

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