

## Characteristics of Natural Fibers and Methods of Obtaining

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**Annotation:** The types of Sansevera plants were analyzed, and research was conducted on which type of fiber can be obtained from them. The results of the study showed that only one type of fiber can be obtained.

**Keywords:** organic acids, saponins, essential oils, hemolytic sapogenin and abamagenin, "pike tail" or "mother-in-law's tongue".

### I. Introduction

Fibers are extracted from plants, animals, and various rocks found in nature in almost all regions of the earth.

Natural plant fibers include cotton, linen, hemp, jute, ramie, coir, sisal, manilla, wool, silk, cotton and goat's milk, and zein fiber from corn protein. In addition, fiber is also produced from the bamboo plant.

### II. Methodology

Cotton fiber has many wonderful properties: very flexible, thin, but strong and resistant to stretching, dyes well. Due to these properties, cotton fibers are used to produce various types of cotton yarns, from very elegant fabrics (maya, batiste, chiffon, etc.) rice) and fabrics widely used in technology (cord, kirza, belting) are obtained.

Fibers obtained from the stem bark are found in the stems and leaves of various plants. In the textile industry, fibers obtained from the bark of the stem are mainly used. The most important of them is flax fiber. Among the fibers obtained from the stem bark used in the textile industry, flax fiber makes up 95-97%.

Flax fibers differ from cotton fibers in terms of properties. They will be ripe, but rougher and thicker. Bark fibers are longer than cotton fibers, but uneven in length. Towels, tablecloths, bed linen and pillowcases, shirts, and technical fabrics are made from soft threads spun from flax stalks, and bags, thick ropes and ropes are made from coarse threads.

Hemp fiber is a one-year plant with a height of 3-5 m and a stem thickness of up to 20 mm.

Hemp is grown in foreign countries, namely in India, Iran and some countries of the African continent. Hemp is mainly used for the production of bags and woven goods. The reason for this is the roughness of its fiber. Planting hemp for fiber mainly covers the period from April 10 to May 1.

Jute is a fibrous annual plant, biologically similar to hemp, close to it in a number of parameters. The stem of jute is long (3-4 m) and thick (10-15 mm), the fibers are coarse like hemp fiber, and its fiber is used for the purposes of using hemp fiber. Jute is grown only in hot countries - India, Pakistan and Bangladesh.

These countries produce 90% of the jute fiber grown in the world. Jute fiber is grown in small quantities in China and African countries. Jute fiber is mainly used for the production of ropes, furniture, carpets and other technical products.

Coir fiber is mainly grown in many parts of India. Meaning rope in Malayalam, the fruit of the palm tree is derived from the rough layer that covers the top of the coconut. The length of one piece of fiber is 15-33 cm, and

the thickness is 0.05-0.3 mm. The wall layer of the fiber is composed of cellulose. The appearance of the unripe fiber is soft and white in color. The lignin content of the fiber makes it hard wood.

The color of the fiber is light red and brown. To obtain coir fiber, the fruits of the tree are harvested, and they are cooled (fermented) in sea or ordinary water for up to 10 months. After that, the fiber is separated from the fruit by hand. The length of the longest fiber is 25.4-30.5 cm, and the length of the middle fiber is 20.3-25.4 cm. Thick and thin ropes, wings, nets used in the fishing industry are produced from the spun coir threads. Its relatively thick fibers are used in the production of silk products. The high content of lignin in the fiber makes coir fiber strong.

The Indian state of Kerala produces 60% of the world fiber market. And Sri Lanka processes 36% of the fiber. So, more than 50% of coir fiber is produced in India.

Rami is an ancient Asian plant belonging to the crape family. There are thousands of textile fabrics and samples made from this plant. It has been determined that it belongs to the III century. Due to the strength of its fiber, rope and rope products are made from it. In ancient times, gauzes for ship sails were made from this fiber. The fiber is classed as a valuable fiber because of its silk-like luster and softness. Among the European countries, the Queen of England Elizabeth-I was the first to get acquainted with the gas made from Chinese crapiva.

Sisal - sisal fiber is obtained from the leaf of the perennial plant "agava". This plant grows in India, Indonesia, African countries and South American countries. Another type of agave that grows in Mexico is called "geneken". The fiber obtained from agave leaves is a technical fiber, its length is 70-130 cm. Technical fiber consists of a number of isolated fibers. The length of solitary fiber is 2-4 mm, thickness is 20-30  $\mu\text{m}$ . The fiber is coarse, the wall is thin, and the tube inside is large.

Manilla fiber is obtained from the leaves of the perennial abaca plant. This plant grows in the Philippines, Indonesia. The technical fiber of abaca is 1.0-5.0 m long. The length of the elementary fibers is 2-12 mm, the thickness is 10-45  $\mu\text{m}$ . The fibers obtained from the leaves are used to make technical fabrics, ropes, and ropes resistant to the decay process used in ships.

Wool is the fiber that covers the skins of sheep, goats and camels. Wool is divided into natural, factory obtained and regenerated types.

Natural wool is obtained directly by shearing the wool of animals, wool obtained in the factory is obtained by brushing the skins of slaughtered animals, and regenerated wool is obtained by the method of processing shavings. Wool fibers are longer than cotton fibers, less tough but more flexible. For this reason, wool fabrics have a number of valuable properties, such as low creasing, abrasion resistance and good twistability. Shirts, suits, coat fabrics, carpets and other products are obtained from threads spun from wool fibers.

Silk is a thin thread obtained from the spinning of silkworm cocoons, which is used to make fine silk fabrics. Mulberry trees are grown to feed silkworms and feed them. And this is hard work and complicated work. Therefore, natural silk is the most valuable raw material in the textile industry. Beautiful light and technical fabrics are made from silk.

Rock wool is a fiber obtained from minerals, and sometimes rocks are formed from this mineral fiber. Stone cotton is produced in Russia, mainly in the Urals. Its length: 6-18 mm. Only thick kalava threads are produced from it. Stone cotton is spun by mixing up to 10% of other fibers. Rock wool does not burn, it conducts heat poorly. Therefore, highly resistant gauzes are used in knitting and in the preparation of protective materials.

Casein fiber - this type of fiber is mainly produced by processing types of products (milk) containing protein and their waste. Casein fiber is produced from cow's milk and flour waste. Mainly casein fiber is produced in Italy and used in addition to wool.

Zein fiber - zein (vicara) fiber is produced in the USA by processing corn protein and its waste. This type of fiber is used in addition to wool, viscose and some synthetic fibers. The method of obtaining fiber from peanut protein is also known. Methods of extracting protein fibers from meat, canning, fish and natural silk industry wastes have also been developed.

In addition, research is currently being conducted on the extraction of fiber from many plants.

### III. Results And Discussion

In our research work, research was conducted on the extraction of fiber from the Sansevera plant. Fiber up to 1 meter long was obtained from this plant species by mechanical and chemical methods.

Sansevera is a stemless evergreen plant of the thistle family. Under natural conditions, it grows in tropical and subtropical regions of Africa. It is characterized by long erect leaves of various colors. Average growth rate produces 3-4 leaves per year. The total height of the plant can reach 1 meter.

Sansevera is a stemless evergreen perennial plant. A species belonging to the Asparagus family. The maximum height can reach 1.20 m. The lowest representatives do not exceed 30 cm. The root part is small in size. Linear leaves grow immediately from the basal region. Their location is strictly vertical. Sometimes there is a slight deviation from the central part of the plant.

Many species and varieties of Sansevera can be found in dry rocky areas of the subtropics and tropics, in Africa, Indonesia, South Florida, India and Madagascar.

Features of the plant: thick root diameter up to 2 cm, grows in the upper layer of the soil, Leaves are like swords, grow in the form of a rosette, Each rosette consists of 6-8 hard leaves and grows upwards, Leaf height - up to one meter, width - up to ten centimeters.

The plant contains a large number of biologically active substances: organic acids, saponins, essential oils, hemolytic sapogenin and abamagenin.

### IV. Conclusion

Phytochemical analysis of Sansevera cylindrical leaf extract showed the presence of steroids, flavonoids, saponins, tannins and phenolic acids. The methanol fraction was found to show the maximum phenolic content. Ethanol extract and its methanol fraction showed significant antioxidant and antidiabetic activity. The ethanol extract was 80.5%, and the methanol fraction was 83.6% of DPPH free radicals at a concentration of 100 µg/ml, respectively. In addition, the methanol fraction contained 57.9% of the enzyme glucose-6-phosphatase at a concentration of 100 µM.

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