

COTTON

Synonyms: Cotton wool, Purified cotton, Absorbent cotton, Surgical cotton.

Biological Source: Cotton consists of the epidermal trichomes or hairs of the seeds of cultivated species of the Gossypium (*Gossypium herbaceum*, *Gossypium barbadense*), belonging to family Malvaceae. Purified cotton or absorbent cotton consists of the trichomes as mentioned above, but freed from fatty matter and adhering impurities. It is also bleached and sterilized.

Chemical constituents:

Raw cotton contains about 90 % of cellulose, 7 to 8 % of moisture, wax, fats and remains of protoplasm. Purified cotton or absorbent is entirely cellulose with 6 to 7 % of moisture.

Chemical Tests:

- (1) Soak cotton fibres in iodine water and dry. Add few ml of 80 % sulphuric acid-trichomes assume purplish-blue or bluish-green colour (distinction from jute, hemp, wool, silk, nylon, alginate yarn and acetate rayon).
- (2) Ammoniacal copper oxide solution (cuoxam reagent) dissolves raw cotton fibres with the formation of balloons, while absorbent cotton dissolves completely with uniform swelling.
- (3) Cotton is insoluble in dilute sodium hydroxide solution and hydrochloric acid (distinction from silk). It is soluble in 66% of sulphuric acid.
- (4) With iodinated zinc chloride solution, it becomes violet coloured.
- (5) To 0.1 g add 10 ml of zinc chloride solution, heat to 40°C, fibres do not dissolve.

Uses :

Cotton is used as a filtering medium and in surgical dressings. Absorbent cotton absorbs blood, mucus, pus and prevents the wounds from infection of micro-organisms.

It is also used as an insulating material.

(B) ANIMAL FIBRES

Silk, wool and horse hairs are the fibres used in pharmaceutical industry, similar to plant fibres. Of these, the former two are important.

SILK

Biological Source : These are the fibres obtained from the cocoons of *Bombyx mori* (Mulberry silkworm) and other species of *Bombyx* and also from *Antheraea* species, family : *Bombycidae* (Order : *Lepidoptera*).

Geographical Source : Fine quality of silk is manufactured in Japan, Italy, China and France. Now-a-days, a large quantity of silk is also produced in India.

Chemical constituents

Silk contain a protein known as fibroin. Fibroin on hydrolysis yield amino-acids glycine and alanine.

Silk is soluble in cuprammonium sulphuric acid (66 %) and concentrated hydrochloric acid (distinction from wool).

Chemical Tests :

(1) When flamed it gives smell of burnt hairs.

(2) It does not contain sulphur and hence, the test with lead acetate does not form black precipitate.

Uses :

Special types of sutures, sieves and ligatures are prepared from the silk.