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USE OF WHITE WILLOW IN PHARMACEUTICAL BIOTECHNOLOGY

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A wide range of biological properties and "softness" of action are the main advantages of medicines made from medicinal plant materials. Therefore, the urgent task of modern pharmaceutical science today is to find such raw materials for the creation of herbal medicines based on biologically active compounds.

Plants of the willow family (Salicaceae) are often used in both the pharmaceutical industry and traditional medicine. In the pharmaceutical industry, bark containing phenolic glycosides, flavanones, catechins, proanthocyanidins and tannins is generally used. In folk medicine - use bark, leaves, shoots and inflorescences [1].

The bark has astringent, bactericidal, diuretic, homeostatic, antidiarrheal and sedative properties, is effective in hemoptysis and rheumatic diseases. Willow leaves are most often used for prostatitis, as an antipyretic, for insomnia, rheumatic pain, to soften calluses [2].

For the pharmaceutical industry, the raw material of white willow is bark. Salix alba bark is harvested from 2-6 year old trees and branches in early spring, before flowering and leafing or early autumn. It is dried in a dark place and in a well-ventilated room. Salicis cortex is dried in a dark place and in a well-ventilated room.

Phytochemical and pharmacological studies show that the bark of white willow contains phenolic glycosides, flavonoids, catechins, proanthocyanidins, anthocyanins, leukoanthocyanidins, higher fatty acids, polysaccharides. Phenolic acids, coumarins, flavonoids and nitrogen compounds are present in white willow leaves. The method of isolation of phenoglycosides allows to intensify the process of extraction of phenolic compounds from plant raw materials and preserve the biological value of the extract (Fig. 1) [1].

Common stages for obtaining biologically active substances from Salix alba are the preparation of plant material, namely cleaning, drying and grinding of the bark.

Conclusion

The biologically active substances of the bark and leaves of Salix alba have a wide range of different properties, such as antioxidant, anti- inflammatory, antitumor and antiviral. The most valuable biologically active substances from the bark of white willow are phenologlycosides, namely salicin and salicortin, and from the leaves - flavonoid - quercitin.

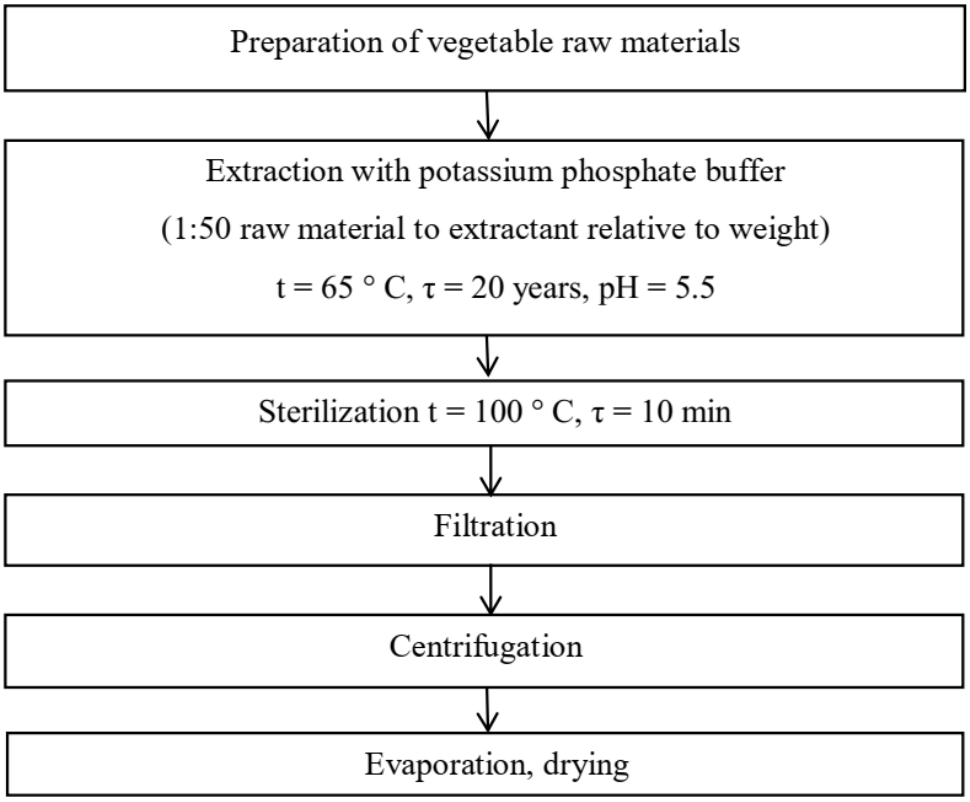

Fig. 1. Scheme of obtaining salicylates of the genus Salix

It is suggested that the flavonoid quercetin and flavanone naringenin may have a therapeutic effect against COVID-19.

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