RESEARCH THE ANTIMICROBICAL ACTIVITY OF *CRATAEGUS SUBMOLLIS* SARG. FRUITS LIPOPHYLIC EXTRACT

Sydora N. V., Demechko O. V.
National University of Pharmacy, Kharkiv, Ukraine
sidora2005@rambler.ru

Introduction. *Crataegus submollis* Sarg. is a representative of the North American flora, is successfully cultivated on the territory of Ukraine as a landscape gardening culture and has a sufficient resource base.

It is a tree with long spines, large leaves and fleshy, large, edible fruits. The plant belongs to the botanical section *Molles* Sarg. From fruits of *Crataegus submollis* Sarg. have been obtained the chloroform, ethyl acetate fraction and phenolic complex (70^{o} ethanol extraction).

In obtained fractions were identified phenol compounds (flavonoids, coumarins, hydroxycinnamic acid), fatty acids, carotenoids. The lipophilic substances of hawthorn practically not been studied, but it is known that these substances possess a wide spectrum of pharmacological activity, including antimicrobial.

So the first thing we decided to explore the antimicrobial activity of the chloroform extract. The output of lipophilic fraction in the chloroform extract was 12%. The most higher concentration in this fraction was for fatty acids and carotenoids.

Scientific interest is the study of antimicrobial activity of lipophilic fraction of fruits *Crataegus submollis* Sarg.

The **aim of our study** was to investigate the antimicrobial activity of lipophilic extract of *Crataegus submollis* Sarg. fruits against the most important in the epidemiological significance bacterial cultures.

Materials and methods. The object of the study was the lipophilic extract of fruits of *Crataegus submollis* Sarg. The raw materials harvested in August 2015 in Kharkiv region. We are used air dry raw material. Extract was obtained with chloroform (method of circulating extraction). Antimicrobial activity of lipophilic fraction was studied on base of «Mechnikov institute of microbiology and immunology» under the leadership of Senior research scientist of immunoreabilitology laboratory Kashpur N. V.

For determining the activity of the lipothilic complex we used the standard bacterial cultures*: Staphylococcus aureus* ATCC 25923, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Proteus vulgaris* ATCC 4636, *Bacillus subtilis* ATCC 6633, *Candida albicans* 885-663. To determine the antimicrobial activity, the bacterial cultures were cultivated on meat pepton agar at

37 °C for 24 hours. Antimicrobial activity was measured as a radius in mm to give a zone of inhibition.

Determination of sensitivity of microorganisms was performed by successive twofold serial dilutions in liquid nutrient medium.

The method is based on titration in liquid nutrient medium investigational antibacterial preparation by successive dilutions certain volume of liquid in the first test tube using these controls - nutrient medium, which does not receive the drug. In all the test tubes were added daily allowance agar suspension of bacterial cultures.

The results were determined after 48 – 72 hours to assess growth delay of micro-organisms in the test tubes containing the appropriate dilution of the drug. The last tube with growth retardation (clear broth) corresponded to minimum inhibitory concentration of antibiotic tested against the strain. For evaluation the bactericidal properties the drug from 2 – 3 tubes the last lack of growth been doing application to dense nutrient media.

After 24 – 48 hours incubation in thermostat that determined the lowest concentration of antibiotic drug in vitro, crop, of which has not given of growth and taking the minimum bactericidal concentration. For most microorganisms as nutrient media used peptonnyy meat broth, for mushrooms - nutrient media Saburo.

Determination of the sensitivity of bacteria was performed by diffusion in agar. In the Petri dish poured 10 ml of molten nutrient uncontaminated environment. After solidification of this layer placed on it sterile stainless steel cylinders (height – 10 mm inner diameter – 6 mm) and filled them "infected" agar of 15 ml.

For this purpose, melted and cooled agar agar added daily washings cultures of microorganisms. For the second layer of agar solidification cylinders were removed in the the wells formed, made investigational antimicrobial agents in volume (0,3±0,05) ml.

Crops were incubated at 37 °C for 24 – 48 hours, then take into account the results of measuring the area of growth delay test microbe. In an experiment used a 2% solution extracts.

Results and discussion. As a result of the study it was found that the lipophilic extract of *C. submollis* Sarg. shows a moderate activity against *S.aureus* and *B.subtilis.*

Conclusions. For the first time established antimicrobial activity of lipophilic substances of fruits *C. submollis* Sarg. The results will allow for expand the information about the spectrum of pharmacological activity of biologically active substances (BAS) of species of the genus Hawthorn (Crataegus L.). The study showed that for the purpose of complex processing of raw materials perspective is the further study of the antimicrobial activity of the ethyl acetate and ethanol complexes obtained from fruits of *C. submollis* Sarg.