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OBTAINING A DRY EXTRACT OF PADUS SEROTINA LEAVES AND STUDYING ITS PROPERTIES

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Introduction

The leaves of the Padus serotina L. (Fig. 1) contain various biologically active substances such as flavonoids, tannins and triterpenoid compounds. Many of them contribute to improving skin condition by reducing inflammation and increasing its tone. These properties make the Padus leaf extract a promising ingredient for the pharmaceutical and cosmetic industries. The dry extract contains a higher concen-tration of biologically active substances then leaves. The aim of this study was developing a method for obtaining a dry extract from the Padus leaves and investigating its properties.

Fig. 1. Padus leaves

The object of the study

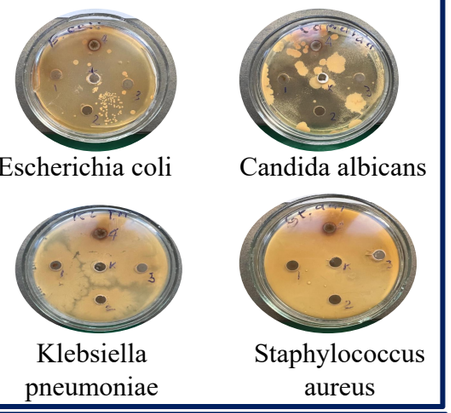
The raw material (leaves of Padus Serotina L.) was collected in the Krasnodar region in the spring of 2023 during the flowering period. The collected raw material was subjected to air-shade drying according to the standard documentation.

Determination the antioxidant activity (AOA)

AOA was detected with a spectrophotometric metod after interaction with the stable chromogenic radical 2,2-diphenil-1-picrylhydra-zyl (DPPH). The absorbtion maximum was obtained at 518 nm. The degree of inhibition of free radicals was calculated using the formula:

$$AOA = \frac{A_{DPPH} - A_X}{A_{DPPH}} * 100\%$$

Antioxidant activity (AOA) per dry residue was 1.4378 µg/ml for dry extract and 0.1481 µg/ml for leaves. Recalculated as flavonoids, AOA was 0.3689 µg/ml for dry extract and 0.0072 µg/ml for leaves.



Materials and methods

Drying: Late cherry leaves (Padus serotina L.) were air-shade dried. **Obtaining the dry extract:** Dry extract was obtained by maceration using 50% ethanol. **Moisture content:** Determined using the standard method for medicinal plants. **Total flavonoids**: Determined using the standard method for ginkgo leaves, adapted for Padus serotina leaves. **Antioxidant activity:** Measured using the DPPH method. **Antimicrobial activity:** Tested using the agar diffusion method with meat-peptone agar and microorganism suspensions. Before determination the antimicrobial activity the extracts were evaporated and dissolved in isotonic sodium chloride solution.

Determination flavonoids in plant material

The content of flavonoids was determined by spectrophotometry after reaction with $AlCl_3$. The absorbtion maximum was observed at 410 nm. The content of flavonoids was calculated using the formula:

$$X = \frac{A * 30 * 25 * 100}{A_{1cm} * 25 * a * 100 * (100 - W)} * 100\%$$

Antimicrobial activity

Test microorganism	Suppression zone radius	
	leaf extract 1:10	dry leaf extract 1:100
Candida albicans	1,9	3,0
Escherichia coli	0	0,7
Staphylococcus aureus	0	0
Klebsiella pneumoniae	0	0

Reference solution: NaCl isotonic
Sample volume: 150 µl, d = 0,7 mm
Thermostated for 24 hours at 37°C

Quantitative indicators of the quality of raw materials and Dry extract from P. serotine leaves

P=0,95, t(0,95,4)=2,78, n=5

Assay	Leaves, %	Dry extract, %
Water	5,7508±0,0018	3,2995±0,0745
Total flavonoid calculated as rutin	4,8855±0,0628	25,6584±0,1301
Etanol-soluble extractives (70%)	39,2152±0,2577	–
Dry residue for extract	–	96,7010±0,0345
Antioxidant activity IC50	6,7527	0,6955

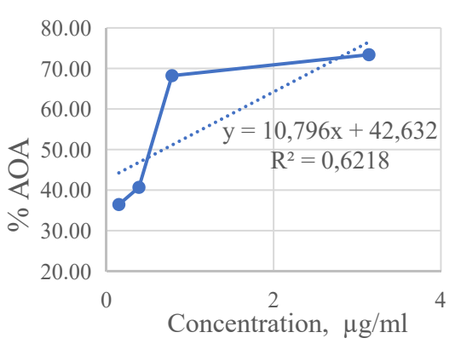


Fig.2. AOA of leaves dry extract

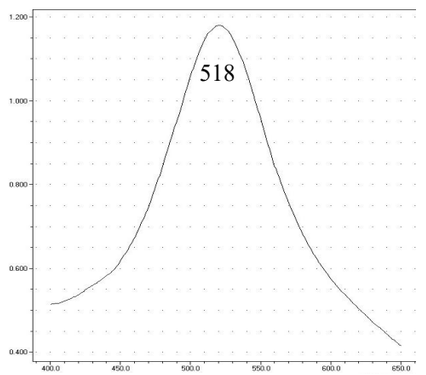


Fig.3. Absorption spectrum of the dry extract after reaction with DPPH

Conclusions

1. Dry extract of bird cherry (P. serotina) leaves was obtained.
2. The content of extractive substances in the leaves, dry residue of the extract, and flavonoids has been established.
3. High antioxidant and average antimicrobial activity of the dry extract has been established
4. Dry leaf extract may be recommend as a potential component of complex antioxidant and antimicrobial preparations.