Aegopodium podagraria L. - antioxidant properties and safety use

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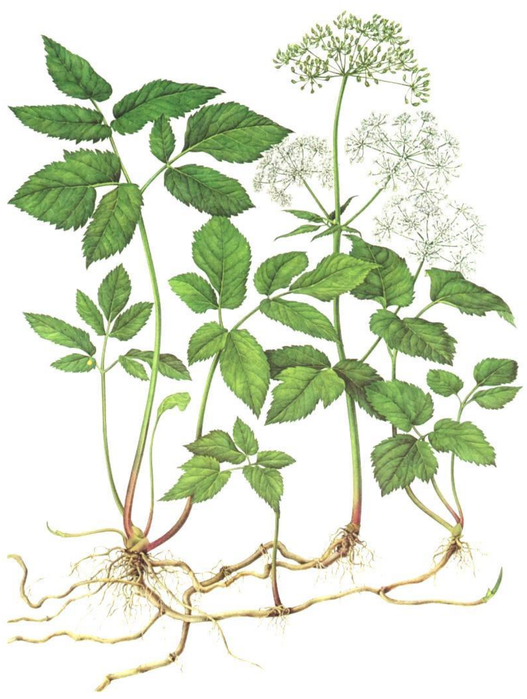
INTRODUCTION



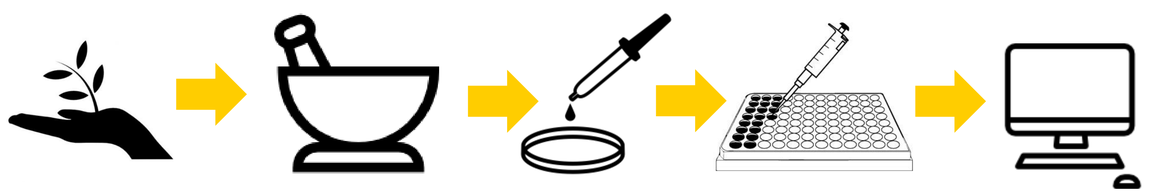
The ground elder (Goutweed) (*Aegopodium podagraria* L.) is a widespread plant of the *Apiaceae* family. Although its chemical content has not been fully researched, it is known that its main group of compounds consists of polyacetylenes (falcarinol and falcarindiol). Moreover, essential oils of the monoterpenes and ssesquiterpenes groups were isolated from this plant, along with coumarins and polyphenolic compounds, such as phenolic acids and flavonoids.

In folk medicine, the ground elder was used to treat gout, kidney and bladder inflammations, and it was used to accelerate the healing of wounds. Preparations made from the ground elder have anti-inflammatory and antimicrobial properties. However, there are no studies confirming the antioxidative properties of the extracts from various morphotic parts of the ground elder, nor are there any studies ascertaining their in vitro toxicity.

AIM

The aim of the study was to investigate the antioxidant status of ethanolic/ aqueous extracts of ground elder. The antioxidant effect of extracts from flowers, leaves, seeds and rhizomes of the plant was tested on the macrophages. The effects of extracts on the parameters of cytotoxicity (proliferation, apoptosis) were investigated to verify the safeness.

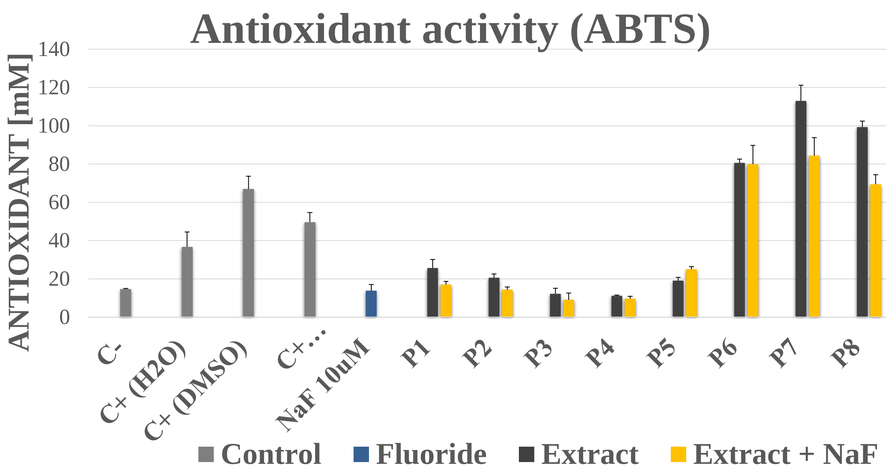
MATERIAL AND METHODS

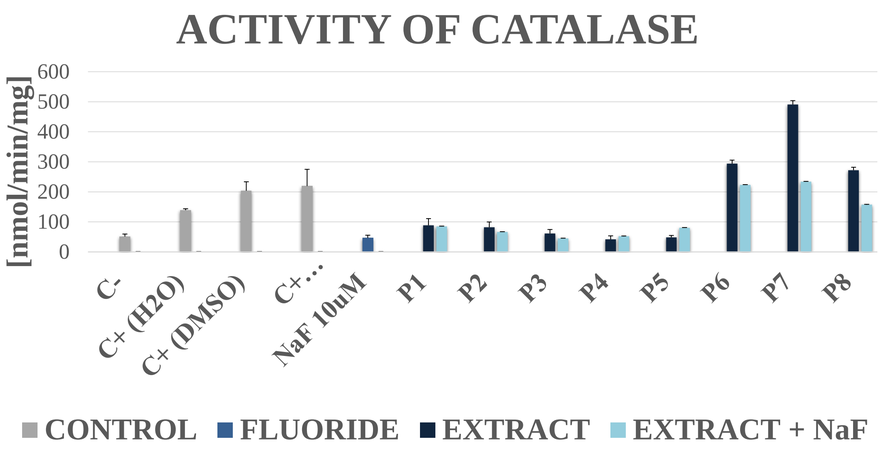


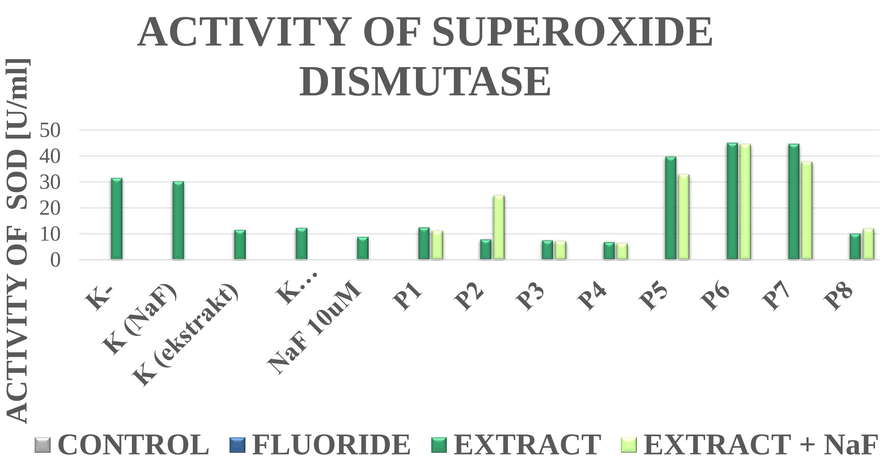
1. 2. 3. 4. 5.

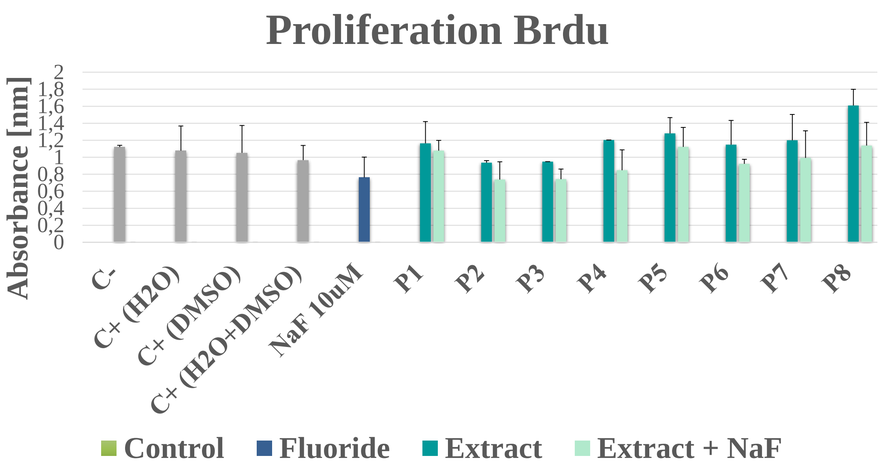
1. Plant material: Leaves, flowers, seeds, roots
2. Lyophilization and homogenization of the material. Preparation of extracts (aqueous and ethanol) at 25°C and 80°C.
3. Cell cultures (THP1 line)
4. Determination of antioxidant potential and activity of antioxidant enzymes and proliferation by immunoenzymatic ELISA. Determination of degree of apoptosis and necrosis
5. Statistical analysis– Statistica 12,5

RESULTS







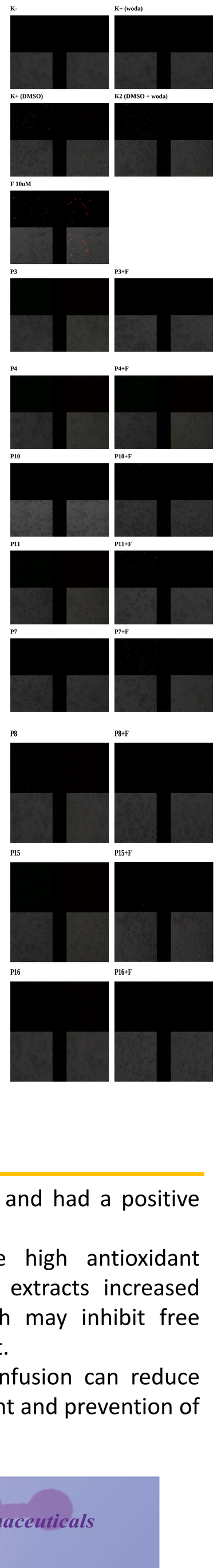


Legend:

P1 - flowers, ethanol extract, 25°C
P2 - flowers, ethanol extract, 80°C
P3 - seeds, ethanol extract, 80 °C
P4 - seeds, water extract, 90 °C
P5 - roots, ethanol extract, 25 °C
P6 - roots, ethanol extract, 80 ° C
P7 - leaves, ethanol extract, 25 °C
P8 - leaves, ethanol extract, 80°C

APOPTOSIS/NECROSIS

Imaging of apoptosis and necrosis by confocal microscopy in macrophages. Red fluorescence - necrosis; green - apoptosis



CONCLUSIONS

- ✓ The extracts protect cells against oxidative stress and had a positive impact on cell proliferation.
- ✓ Spectrophotometric methods demonstrated the high antioxidant capacity of extracts of flowers and seeds. The extracts increased antioxidant potential and enzyme activity, which may inhibit free radical reaction by antioxidants contained in extract.
- ✓ Goutweed added to the food or consumed as infusion can reduce oxidative stress, which may be used in the treatment and prevention of many diseases.

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