

PLANT POLYPHENOLS, THEIR STRUCTURE, PROPERTIES AND APPLICATION

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Natural polyphenols such as coumarins, flavonoids etc. are of increased interest for pharmacologists, toxicologists due to the wide range of their pharmacological activity. They represent accessible and reproducible sources for chemical modification and design of new compounds.

The goal of this work is to reveal new sources of biologically active substances and to create new medicines on their base. Moreover, we conducted phytochemical studies of 6 types Rhododendron family Ericaceae: Rh.auréum Georgi, Rh.caucasicum Pall., Rh. dahuricum L., Rh. luteum Sweet., Rh. ponticum L., Rh.Ungernii Trautv. of Ukraine and Caucasus flora.

For the extraction of biologically active substances of polyphenol compounds, water-alcohol solutions were used. Methods of adsorption and distribution chromatography were employed for separation on different sorbents (silica gel, polyamides, aluminium oxide). The structure of obtained compounds defined by their physico-chemical properties, results of paper and thin layer chromatography, UV, IR, NMR spectroscopies in comparison with the original valid standard of flavonoids and their derivatives. As a result, more than 40 compounds were obtained and 32 identified: coumarins (5), flavonoids (12), catechins (2), arbutin, benzoic acid derivatives (3), cinnamic acid derivatives (5), triterpenoids (2), chlorophylls (2). The results confirms the presence of flavonoids of flavonols family in all investigated Rhododendron species.

A new polyphenols herbal medicine has low toxicity; possess spasmolytic, antiinflammatory, choleric and analgesic action.

The relationship between chemical structure and pharmacological activity of flavonoids was established. It was shown that the force of exhibited phenomena depends on quantity of free hydroxy-groups in aglycones and on the nature of carbohydrate component in their glycosides.

Furthermore, the recipe of mayonnaise containing quercetine was developed in collaboration with Ukrainian research institute of oil and fats Ukrainian Academy of Agrarian Science.

Finally, the obtained results demonstrates the prospects of Ericaceae family implementation for the development and application of new low toxic medicines.