

Biologically active substances from unused plant materials

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Natural products, such as plants extract, either as pure compounds or as standardized extracts, provide unlimited opportunities for new drug discoveries because of the unmatched availability of chemical diversity. Probably based on historical background we utilize only certain plant parts. In many cases there is not enough of required material or collection damages plant itself. The possible solution we could find in utilization of unused or waste plant parts.

This work is focused on analysis of bioactive compounds content in different parts of medicinal plants such as genus *Magnolia*. Stem bark of these trees are part of Chinese traditional medicine. The collection of stem bark is devastating for the tree.

Flowers and leaves from *Magnolia tripetala*, *Magnolia obovata* and their hybrids were separately extracted with 80% methanol. Resulting methanolic extract were subsequently fractionated with chloroform under acidic conditions and mixture of chloroform and methanol under basic conditions in term of increasing polarity (Harborne, 1998) into four fractions, neutral, moderately polar, basic and polar extract. Each extract was screened for presence of biological activity, such as antimicrobial, antioxidant, antidiabetic, anti-inflammatory, cytotoxic activity. Extracts exhibiting positive results were than analyzed and separated using HPLC the components were identified using mass spectrometry. Using mass spectrometric data compared to libraries, we were able to found, that in the major proportion there are three compounds identified as magnolol, honokiol and obovatol, which are considered to be the main active substances in stem bark (Kelm and Nair (2000), Lee, Lee *et al.* (2011), Shih, Kuo *et al.* (2016)). Quantification of magnolol, honokiol and obovatol in both parts of all parent and hybrid trees was performed using compounds isolated from *Magnolia tripetala* flowers.

The most active fraction from both flowers and leaves, exhibiting all of tested activities except cytotoxicity was moderately polar extract. Using mass spectrometric data compared to libraries, we were able to found, that in the major proportion there are three compounds identified as magnolol, honokiol and obovatol, which are considered to be the main active substances in stem bark (Kelm and Nair (2000), Lee, Lee *et al.* (2011), Shih, Kuo *et al.* (2016)).

Stem bark of trees of genus *Magnolia* was collected more than two thousand years. As the most active compounds are considered magnolol, honokiol and obovatol. Not negligible content of these compounds we found also in flowers and leaves, whose collection is not destroying for the tree and could therefore become a more appropriate source of these compounds.

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