

The Influence of Temperature on Apigenin Extraction from Chamomile (*Matricaria recutita*) by Superheated Water

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Abstract : Apigenin is a flavone synthesized by many plants and quite abundant in chamomile (*Matricaria recutita*) in its free form and in the form of its glucoside and different acylated forms. Many beneficial health effects have been attributed to apigenin, such as chemo-preventive, anxiolytic, anti-inflammatory, antioxidant and antispasmodic. It is reported that free apigenin is much more bioactive in comparison to its bound forms. Subcritical water offers numerous advantages in comparison to conventional extraction techniques, such as good selectivity, low price and safety. Superheated water exhibits high hydrolytical potential which must be carefully balanced when using this solvent for the extraction of bioactive molecules. Moderate hydrolytical potential can be exploited to liberate apigenin from its bound forms, thus increasing biological potential of obtained extracts. The polarity of pressurized water and its hydrolytical potential are highly dependent on the temperature. In this research chamomile ligulate flowers were extracted by pressurized hot water in home-made subcritical water extractor in conditions of convective mass transfer. The influence of the extraction temperature was investigated at 30 bars. Extraction yields of total phenols, total flavonoids and apigenin depending on the operational temperature were calculated based on spectrometric assays. Optimal extraction temperature for maximum yields of total phenols and flavonoids showed to be 160°C, whereas apigenin yield was the highest at 120°C.

Keywords : superheated water, temperature, chamomile, apigenin

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