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Chemical constituents and antioxidant activity of Japanese quince (*Chaenomeles japonica*) leaves

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Statement of the Problem: All botanical parts of quince, including leaves, accumulate various antioxidants that protect the body from oxidative stress. Increasing number of scientific research and publications demonstrate the potential of quince and its constituents in the pharmaceutical and cosmeceutical industry. It has been demonstrated that the most prevalent quince tree (*Cydonia oblonga Miller*) is a good and cost effective source of metabolites with outstanding biological properties. Specifically, quince leaves shown to constitute a promising array of bioactive phytochemicals, suitable for application in foods and pharmaceutical fields.

Aim: The purpose of this study is to investigate the chemical composition and antioxidant potential of quince (*Chaenomeles japonica*) leaves.

Methodology: Fresh Japanese quince leaves were collected from the orchards of the Institute of Horticulture, Lithuanian Research Centre for Agriculture and Forestry, October 2016. The antioxidant activity of the extracts was tested using the DPPH free radical scavenging assay. The concentrations of total phenolic compounds were measured spectrophotometrically using the Folin-Ciocalteu phenol reagent and expressed as gallic acid equivalents and proanthocyanidin contents were expressed as (+)-catechin equivalents.

Findings: The dry matter content of fresh quince leaves was $40.2 \pm 0.03\%$. The total phenolics content of ethanolic (70%) leaf extract was 21.2 ± 1.16 mg/g fresh weight (FW), whereas maceration of leaves with pure methanol promoted the extracts with significantly higher amount of total phenolics 38.4 ± 2.01 mg/g fresh weight (FW). Antioxidant activity of the extracts was 101.3 and $145.4 \mu\text{mol TE/g FW}$ for ethanolic and methanolic extracts respectively. The total proanthocyanidins content of fresh leaf extract was 1.8 ± 0.02 mg/g and that of lyophilized leaf extract 16.30 ± 0.22 mg/g.

Conclusion & Significance: The current research suggests the potential of quince leaves as promising raw material for the extraction of phenolic antioxidants that might be utilized in nutraceuticals, functional foods and cosmeceuticals.

Biography

Ieva Urbanavičiūtė is pursuing her PhD in Agronomy at Lithuanian Agriculture and Forestry Research Center of Horticulture Institute. She is conducting a research in biochemistry and technology laboratory on "Quince biologically active substances and quince waste free processing technology development". These studies will investigate different processing methods and their impact on bio-active substances and changes during processing, as well as antioxidant activity in the finished products.

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