DETERMINATION OF BETULINIC ACID CONTENT AND IN VITRO ANTIRADICAL ACTIVITY IN JAPANESE QUINCE (CHAENOMELES JAPONICA (THUNB.) LINL. EX SPACH) FRUIT SAMPLES

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Japanese quince (*Chaenomeles japonica* (Thunb.) Lindl. ex Spach) belongs to the rose family (*Rosaceae* Juss.) and is rich in many active compounds, including triterpenic acids such as betulinic, corosolic, and ursolic acids. Betulinic acid is well known for its antiviral and anticancer activities [1]. The aim of this research was to determine the quantitative content of betulinic acid and the antiradical activity *in vitro* of Japanese quince fruit samples.

Japanese quince fruit samples were collected from 11 different regions of Lithuania. For extraction, 1 g of lyophilized fruit material was placed in dark glass bottles and extracted with 10 mL of acetone (100%, v/v). The samples were sonicated for 50 min in an ultrasonic bath (565 W, 80 kHz). The extracts were then vacuum-filtered and passed through 0.2 µm membrane filters prior to HPLC analysis. The quantitative composition of betulinic acid was determined using the HPLC method developed by Butkevičiūtė et al. [2]. Antiradical activity *in vitro* was assessed using the DPPH assay: 20 µL of ethanolic fruit extract was mixed with 3 mL of freshly prepared DPPH working solution and incubated in the dark for 30 min. Absorbance was measured at 517 nm using a UV–Vis spectrophotometer [3].

HPLC analysis showed that the betulinic acid content varied significantly among the Japanese quince samples from 310.98 to 1468.67 µmol TE/g. The highest amount (1468.67±88.35 µg/g, $p<0.05$) of betulinic acid was found in samples collected in the Vilkaviškis district and the lowest amount (310.98±20.98 µg/g) – in samples from the Šiauliai district. The betulinic acid amount in the analyzed Japanese quince fruit samples varied within a very wide range. The calculated coefficient of variation was 54.89%

The antiradical activity *in vitro* of the Japanese quince fruit extracts also varied across regions, ranging from 12.87 to 41.34 µmol TE/g. The weakest antiradical activity *in vitro* (12.87±0.01 µmol TE/g, $p<0.05$) was found in samples from the Biržai district, while the strongest antiradical activity was determined in samples from the Vilnius and Jonava districts (41.34±1.11 µmol TE/g and 38.84±1.13 µmol TE/g, respectively). The coefficient of variation, reflecting the relative variability of antiradical activity *in vitro*, across the investigated extracts, was 29.66%.

In conclusion, the highest betulinic acid amount was determined in Japanese quince fruits from the Vilkaviškis district, whereas the strongest antiradical activity *in vitro* was found in samples from the Vilnius and Jonava districts. The Japanese quince fruit samples collected in these districts may be valuable for further phytochemical and biological investigations.

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