

Seeds of Japanese Quince – A Potential Source of Natural Antioxidants

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Japanese quince (*Chaenomeles japonica*) is a minor fruit crop in Latvia; it is cultivated mainly for production of juice, aroma and fruit fibre. Just several studies are evolved to evaluate antioxidant activity of fruit pulp and seeds of Japanese quince.

The aim of our work was to obtain the lipophilic extracts of seeds of Japanese quince (provided by the Latvia State Institute of Fruit-Growing), to determine the composition of fatty acids of seed oil and to appraise usability of these seeds for improvement of the oxidative stability of polyunsaturated vegetable oils.

The seeds of Japanese quince contain about 12% of oil with iodine value 122.80 g I₂/100 g and acid value 3.12 mg KOH/g; the major fatty acids are linoleic (52.4%), oleic (35.6%) and palmitic (9.9%) acids.

We used cold pressed rapeseed and hempseed oil to characterize the antioxidant potential of seeds of Japanese quince. Variable mixtures of these oils containing 1 to 20 wt-% extracts of the seeds were prepared. Different methods were used to prepare the extracts: milled quince seeds were extracted with rapeseed or hempseed oils, the mixtures of quince and rape or hemp seeds were cold-pressed; besides that a combination of both previously mentioned methods was applied. All the extracts were subjected to accelerated oxidation conditions (samples were kept at 60°C in dark) and oxidation processes were characterized by detection of the peroxide values. Other methods for evaluation of antioxidant potential (Fenton reaction, the resistance to the radical cation of 4-(dimethylamino)aniline and Rancimat induction period) were exploited, too. All these data were compared with the oxidative stability of hempseed and rapeseed oil containing 0.02% additive of widely used synthetic antioxidant 2,6-di-*tert*-butyl-4-methylphenol (BHT).

Our studies established that the highest antioxidant activity can be reached with 5 wt-% and 10 wt-% additives of extracts of quince seeds for rapeseed and hempseed oil, correspondingly. The antioxidant potential of our extracts of quince seeds is comparable with the impact of 0.02% additive of BHT.