

**Inter-varietal variation in the composition of seeds and seed oils from winter melon on
[Benincasa Hispida (thunb.) cogn.] fruits.**

ABSTRACT

Winter melon (*Benincasa hispida*), locally known as Kundur, is a vegetable crop, popular, especially among Asian communities both for nutritional and medicinal attributes. In the present work, physicochemical properties of seeds and the extracted seed oils were examined and compared among three cultivars namely round, oval and hybrid of winter melon. The seeds from round, oval and hybrid fruits, exhibited protein, fiber and ash contents 28.18-42.03, 19.36-26.21 and 5.02- 11.81%, respectively. The oils were extracted based on Soxhlet method by petroleum ether, whilst yields ranged from 17.78- 32.53% (wt/wt). The extracted oils were analyzed for physicochemical parameters, and fatty acids, tocopherols and sterols profiles. The results for specific gravity (25°C), refractive index (nD 25°C), iodine value (IV), saponification value (SV), peroxide value (PV), and free fatty acid (% as oleic acid) were 0.89-0.91 g/mL, 1.4627-1.4646, 119.9-125.1 g I/100 g oil, 182.3-194.1 mg KOH/ g oil, 1.13-1.33 mequiv.O₂ /kg, 1.57-2.10%, respectively. The oil color intensity in terms of yellow and red units was 6.9Y + 1.0 R to 8.9Y + 1.9R. The amounts of oil tocopherols as analyzed by HPLC varied widely among the cultivars tested showing α -tocopherol 31.1-207.6 mg/kg and γ -tocopherol 60.4-146.0 mg/kg. According to the GLC analysis linoleic acid (C18:2) was established to be the principal fatty acid (63.10-70.64%) followed by C16:0 (12.45-17.59), C18:1 (8.46-12.87%) and C18:0 (5.13-7.48%). Analysis of oil sterol fractions, using GC and GC-MS, revealed the presence of β -sitosterol (54.62–60.50%), campesterol (15.10–18.50%), stigmasterol (11.00–14.30% and Δ^5 -avenasterol (6.40–8.14 %) as the four main components. Most of the properties of the seed oils analyzed varied significantly among fruit cultivars tested. Overall, we concluded that the seeds, which are under-utilized and often discarded as an agrowaste, from winter melon should be explored for extraction of high-linoleic oil with additional tocopherols and phytosterol benefits.

Keyword: Inter-varietal variation; Seed oils; Winter melon.