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Changes in quality, bioactive compounds, fatty acids, tocopherols, and phenolic composition in oven- and microwave-roasted poppy seeds and oil

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1 **Changes in quality, bioactive compounds, fatty acids, tocopherols, and**
2 **phenolic composition in oven- and microwave-roasted poppy seeds and oil**

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14 **ABSTRACT**

15 The oil quality, fatty acid composition, tocopherol contents, and phenolic compounds of oven-
16 and microwave-roasted seeds from three different poppy varieties (blue, yellow, and white)
17 were investigated. The quantity, acidity, unsaponifiable matter, peroxide, and saponification
18 values of oil were generally higher in roasted seeds compared to those in raw poppy seeds
19 (control). Total phenolics, flavonoids, anthocyanin contents, and antioxidant activity of
20 roasted seeds were less than those of the control. Roasting decreased fatty acid contents
21 including linoleic acid in blue, yellow, and white seeds and its contents remained 57.91,
22 61.91, and 64.83% in control oil (oil from raw seeds) but decreased to 57.23, 60.78, and 64.11%
23 in oven-roasted and 56.97, 60.08, and 60.84% in microwave-roasted seed oil, respectively. The
24 tocopherol (α , β , γ , and δ) contents also decreased after roasting and β and γ -types
25 predominated. The major phenolic compounds were vanillic, *p*-hydroxybenzoic, ferulic, *p*-
26 coumaric, cinnamic, and protocatechuic acids. The vanillic acid content ranged from 64.38-
27 71.17 mg/100 g in raw seed, 41.86-49.76 mg/100 g in oven-roasted, and 43.66-56.71 mg/100 g in
28 microwave-roasted seed. The current study revealed that poppy seeds and their oil have
29 excellent nutritional qualities that are significantly reduced after roasting.

30 **Key words:** *Papaver somniferum* L., oven and microwave roasting, poppy seed oil
31 quality, bioactive compounds, fatty acid composition

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