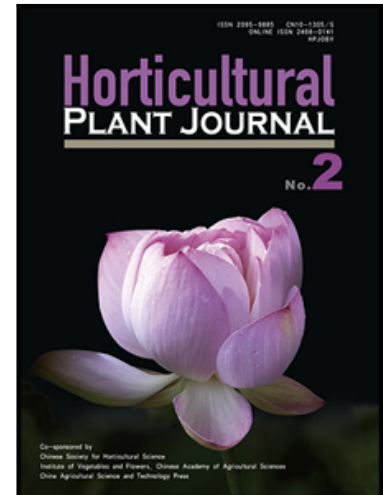


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Variation in Polyphenolics and Antioxidant Activity of Traditional Apple Cultivars from West Himalaya, Uttarakhand

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1

Abstract

Apple (*Malus × domestica*) is largely known for polyphenolic and antioxidant properties; however, systematic investigation in the apple growing in the Indian Himalayan region is not carried out. The present study therefore, attempts to quantify polyphenolics and antioxidant activities in three traditional apple cultivars namely 'Benoni', 'Fanny' and 'Rymer' growing at different locations of Uttarakhand (west Himalaya), India. Results revealed that phenolic (0.94–7.00 mg GAE·g⁻¹ FW), flavonoid (1.02–9.86 mg QE·g⁻¹ FW), flavonol (0.77–6.92 mg CE·g⁻¹ FW), tannin (15.49–37.99 mg TAE·g⁻¹ FW) and antioxidant activity (ABTS, 3.10–67.36; DPPH, 4.99–14.06; FRAP, 4.70–39.21 mmol AAE·kg⁻¹ FW) varied significantly among the cultivars and maximum content was recorded in Rymer fruits of Mukhwa location. Altitude showed significant ($P < 0.05$) positive relationship with total phenolic ($r = 0.895$), flavonoid ($r = 0.843$), flavonol ($r = 0.812$), ABTS ($r = 0.856$) and FRAP activity ($r = 0.830$). Based on the results, it is concluded that among three cultivars, Rymer is one of the most promising sources of polyphenolic content and antioxidant activity and therefore, recommended for mass plantation at suitable locations in Uttarakhand for harnessing maximum potential.

Keywords: apple; traditional cultivar; antioxidant; polyphenolics; west Himalaya

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