



## Assessment of Antioxidant Properties of *Elaeagnus latifolia* L.: An Important Wild Edible Fruit Species of Western Himalaya

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**Abstract** *Elaeagnus latifolia* L. (family: Elaeagnaceae), is a wild-growing Himalayan shrub. Fresh berries of the species are consumed by mountainous populace as a food supplement, however as the biochemical attributes of the species is still lacking or limited. Therefore, the present study was focused to analyze polyphenolics-antioxidant properties of both fresh & dried berries in different solvents, collected from Chaudas valley of Pithoragarh district. Results showed a significant ( $p < 0.05$ ) variation among investigated parameters in different solvents. As a result, fresh berries were found potent source of polyphenolics (phenolics 1.65; flavonoids 1.35; flavonols 1.21; tannins 1.49; proanthocyanidins 1.21 mg/g, respectively) and antioxidants (ABTS 2.55; DPPH 2.74; FRAP 2.25; OH· 1.16; NO· 1.19 mM AAE/100 g), respectively, as compared with dried berries. The moderate polarity of solvents (ethanol, methanol) was found suitable for harnessing maximum potential of the species. Furthermore, results suggested that both fresh & dried fruit berries are natural sources of various health benefit compounds (polyphenolics, antioxidants and other bioactive constituents), and should be further utilize for preparation of nutritious food stuffs which will be beneficial for plummeting the malnutrition deficiency.

**Keywords** *Elaeagnus latifolia* · Antioxidant · Polyphenolics · Chaudas valley · Uttarakhand

Indian Himalayan region (IHR) is a rich repository of various wild edible fruits and medicinal plants, and about 675 wild edible fruit species are consumed & utilized by mountainous communities of the region for curing various ailments viz. degenerative & neuro-degenerative diseases, aging, as well as fulfilling the daily requirements of vitamins, minerals, antioxidants and other health benefiting compounds [1–3]. Today, demand and consumption of wild edible fruit species is increases worldwide due to natural sources of diverse health benefit components and preparation of value added natural products. The therapeutic significance of antioxidant and nutritional attributes of wild edible fruit species is not well-known. Keeping in mind the importance of wild edible fruits, the present investigation was carried out to explore the antioxidant-nutritional characteristics of fresh and dried (fruit) berries of *Elaeagnus latifolia* L., an important wild edible fruit species of Western Himalaya. This is an evergreen deciduous shrub popularized as Bastard Oleaster, grows up to ten feet tall and distributed in the temperate to subalpine zones of India and Southeast Asia. The plant has alternate pinnately compound leaves. It possess a bright red colored speckled berry, about the size of a grape or ~0.75 cm in diameter. The ripened pulpy berry showed a sweet and slightly sour taste. The local communities of Himalayan region consumed fully ripened berries as a raw or processed form, and also utilized traditionally for preparation of chutney, soup [4, 5].

A total of 15 individual plants (approx. 180–200 cm in height) were tagged in the mixed forest of Chaudas valley (N 29° 58.92'; E 80° 38.08'; 2600 m asl.), district Pithoragarh, Uttarakhand, India. About 3.0 kg freshly fully ripened berries (reddish-orange color; Fig. 1) were collected randomly from all tagged plants during the rainy season (August 2021). The collected berries were brought to the laboratory of G.B. Pant National Institute of Himalayan Environment

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