

Oil and Antioxidant Potentials of the Evening Primrose Seeds Planted in Turkey

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Evening primrose (*Oenothera biennis* L.) oil is one of the most important health-promoting specialty oils, and is being used in increasing amounts in nutritional and pharmaceutical preparations. The oil is rich in linoleic acid (70-75 %) and gamma-linolenic acid (8-14 %), which is an important intermediate in the human metabolic pathway that converts dietary linoleic acid into prostaglandins. The bioconversion of linoleic acid to gamma-linolenic acid (GLA) is catalyzed by the enzyme D-6-desaturase. The activity of this enzyme is often impaired, resulting in lower than desirable production of GLA. Factors believed to impair the human D-6-desaturase enzyme include aging, stress, diabetes, alcohol, smoking, cholesterol, *trans*-and saturated fatty acid consumption. Dietary supplementation of GLA with naturally derived oils are reported to play a beneficial role in treating several pathological conditions, including atopic eczema, dermatitis, diabetic neuropathy, premenstrual syndrome, rheumatoid arthritis and cancer. For the last ten years a numbers of studies have been performed on the high antioxidant potential of evening primrose seeds like the other oil seeds which have a high content of polyunsaturated fatty acids as well.

Evening primrose is commercially cultivated in over 15 countries for its oil. There is no commercial cultivation of this plant in Turkey till now. In this study , evening primrose seeds of the plants planted for the first time in Istanbul have been characterized for its oil and antioxidant potential.

The oil content of the seeds harvested in 2008 was 33 % on the dry basis, and GLA content of the oil was determined as 7.9 %. Eventhough the oxidation stability (Rancimat, 110 °C) of the hexane extracted oil was determined as 3.74 hours, 200 ppm of the crude ethyl acetate extract obtained from defatted seeds increased the oxidation stability of a refined sunflower oil from 4.66 to 7.98 hours. The oxidation stabilities of the same sunflower oil with the addition of 200 ppm BHT as 8.94 hr. The ethanol (96%) extract of the defatted evening primrose seeds ,which was in deep wine colour, did not show any antioxidant activity in the oil system.