

ANTIOXIDANT PROPERTIES OF SOME PLANT EXTRACTS AND EFFECT OF THEIR ADDITION ON THE OXIDATION STABILITY OF BIODIESEL

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Abstract. The extracts from the leaves of *Deschampsia antarctica* É. Desv., *Camelina sativa* (L.) Crantz, and *Camellia japonica* L. plants, as well as from *Camelina sativa* and *Silybum marianum* seedcakes were investigated as potential additives for improvement of biodiesel stability against oxidation. Composition of the extracts was studied by means of HPLC, and antioxidant properties were evaluated using Folin-Ciocalteu assay and DPPH test. The oxidation of biodiesel was monitored during the accelerated procedure at 43°C, with the changes in the acid number of biodiesel samples being the criteria of this process. In spite of significant distinctions in the content of various phenolic compounds, all the extracts were found to possess high antioxidant activity and decelerate biodiesel oxidation by 9-26%. The data did not reveal a directly proportional relationship between the antioxidants content in the extract, on the one hand, and the enhancement in biodiesel stability, on the other hand; various extracts had different influence on the behaviour of biodiesel from rape and camelina seed oils. The results obtained are consistent with the assumption that there is no universal stabilizer for different types of biodiesel and indicate the prospects on searching for novel antioxidants of natural origin to inhibit oxidative processes.

Keywords: plant extract, phenolic compound, antioxidant, biodiesel, oxidation stability.