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21-24 November 2010 · The Westin Grand Hotel · Munich · Germany

Improvement of the Oxidative Stability of Vegetable Oils with Lipophilic Oat Extracts

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Oat (*Avenus sativa* L.) is a source of valuable compounds, including antioxidants. Avenanthramides (unique phenolic antioxidants of oats), other polyphenols, carotenoides, tocopherols etc. are identified in oats. In order to extract antioxidants usually variable toxic organic solvents are used. These solvents would not be acceptable for the preparation of extracts intended to increase the oxidative stability of vegetable oils used for food, cosmetics or medicine.

The aim of our study was to examine possibilities to prepare the oil extracts of oat with increased oxidative stability. We employed three different methods to obtain such lipophilic extracts.

Grinded oats were macerated in cold-pressed rapeseed, hempseed or flaxseed oil for several hours, and after were filtered (method A). Other extracts were obtained by cold pressing of oil from the mixture of oil seeds and grinded oat (*Pat.* LV 13200; method B). The third method employed to prepare antioxidant extracts was developed in our lab: grinded oats were macerated in some above mentioned oil, after that sample was mixed with corresponding oil seeds and cold pressed (method C). All the methods were exercised for variable (5, 10, 20, 30, 40 or 50 wt %) amount of oat additive. In order to find out the oxidative stability of prepared extracts, all the samples were subjected to accelerated oxidation conditions. The oxidation processes were monitored by peroxide and acid values.

We have found out that all prepared lipophilic extracts exhibit antioxidant activity. When the extracts were obtained by the method B or C, oat additive increased oxidative stability of more unsaturated hempseed and flaxseed oils in comparison with extracts prepared by maceration. Addition of oat increased oxidative stability of hempseed oil even 3 or more times.

We have demonstrated that vegetable oils can be used as solvents to prepare lipophilic oat extracts with remarkably increased oxidative stability. Such extracts can be used in food, for medical purposes and for preparation of cosmetics as usage of toxic solvents is excluded.
