

(empty line)

The effect of rapeseed meal extract on the frying stability of rapeseed oil during potato chips frying

Ewa Górnicka¹, Agnieszka Kita¹, Magda Aniołowska¹, Aneta Wojdyło², Małgorzata Wroniak³

Wrocław University of Environmental and Life Sciences,

¹Department of Food Storage and Technology,

²Department of Fruit, Vegetable and Cereal Technology

³Warsaw University of Life Sciences, Department of Food Technology

Poland

(empty line)

The aim of the study was to ascertain how the supplementation with polyphenol extracts from rapeseed meal affects the thermooxidative stability of frying oils during deep-fat frying of potato chips. The material used for investigation was rapeseed oil supplemented with 400 ppm (RO-400), 800 ppm (RO-800), 1200 ppm (RO-1200) of polyphenol extract added before frying and oil without any supplementation (RO). The experiments were of three days' duration and entailed the following: potato chips were fried for eight hours per day in oils heated to 170°C in 30 minutes cycles. In fresh and after every four hours of frying, the oils were analyzed for acid and anisidine values, colour, fatty acid composition, polar fraction and oxidative stability (Rancimat). Additionally in oils were analysed antioxidant activity (ABTS) and polyphenol content.

Hydrolytic changes in the frying oils tested were found to be no pronounced when polyphenol extract was added. The supplementation with polyphenol extract improved the oxidative stability of the oil. The best antioxidative effect was observed in oil with highest supplementation. The addition of polyphenol extract reduced the loss of polyunsaturated acids (C 18:2 and C 18:3) in the frying oils by 15% (RO-400), 32% (RO-800) and 48% (RO-1200). The colour of the oils supplemented with polyphenol extracts was lighter than without any supplementation. The most conspicuous changes in oils (ΔE) during frying were observed in oil without any additives (RO) and the least noticeable changes in oil with 1200 ppm (RO-1200). After 24 hours of frying only in oil without supplementation the polar fraction content was higher than 25%. With increasing polyphenol extract addition the content of polar fraction in frying oils decreased. The oxidative stability of oils was improved by addition of polyphenol extracts.