

Comparison of the Oxidative Stability of Chinese Vegetable Oils during Repeated Deep-Frying of French Fries

Authors : TranThi Ly, Ligang Yang, Hechun Liu, Dengfeng Xu, Haiteng Zhou, Shaokang Wang, Shiqing Chen, Guiju Sun

Abstract : This study aims to evaluate the oxidative stability of Chinese vegetable oils during repeated deep-frying. For frying media, palm oil (PO), sunflower oil (SFO), soybean oil (SBO), and canola oil (CO) were used. French fries were fried in oils heated to $180 \pm 50^\circ\text{C}$. The temperature was kept constant during the eight h of the frying process. The oil quality was measured according to the fatty acid (FA) content, trans fatty acid (TFA) compounds, and chemical properties such as peroxide value (PV), acid value (AV), anisidine value (AnV), and malondialdehyde (MDA). Additionally, the sensory characteristics such as color, flavor, greasiness, crispiness, and overall acceptability of the French fries were assessed. Results showed that the PV, AV, AnV, MDA, and TFA content of SFO, CO, and SBO significantly increased in conjunction with prolonged frying time. During the deep-frying process, the SBO showed the lowest oxidative stability at all indices, while PO retained oxidative stability and generated the lowest level of TFA. The French fries fried in PO also offered better sensory properties than the other oils. Therefore, results regarding oxidative stability and sensory attributes suggested that among the examined vegetable oils, PO appeared to be the best oil for frying food products.

Keywords : vegetable oils, French fries, oxidative stability, sensory properties, frying oil

Conference Title : ICFQSNA 2022 : International Conference on Food Quality, Safety and Nutritional Analysis

Conference Location : Bangkok, Thailand

Conference Dates : December 20-21, 2022