COFFEE GROUNDS AND ITS BY-PRODUCTS AS SOURCES OF ANTIOXIDANT COMPOUNDS FOR THE OXIDATIVE STABILIZATION OF MEAT PRODUCTS - REVIEW

A.-M. Ioniță[1*], M.-M. Lăpădat[1], A.-M. Pîndaru[1,2], D.-C. Popa[1]

[1]University of Agronomic Sciences and Veterinary Medicine of Bucharest, Faculty of Animal Productions Engineering and Management, Department of Production and Processing Technologies, Romania, e-mail: igpa@usamv.ro
[2]University of Bucharest, Faculty of Biology, Department of Botany and Microbiology, Romania, e-mail: secretariat@bio.unibuc.ro
**e-mail : alexandra.maria2311@yahoo.ro*

Abstract

Coffee processing generates large volumes of by-products - spent grounds, green beans, silverskin and husk - rich in chlorogenic acids, caffeine and flavonoids with radical-scavenging capacity. This review synthesizes 22 experimental studies (2015-2026) testing these by-products as natural antioxidants in meat matrices (beef, pork, chicken, mutton), selected from a verified bibliographic matrix after excluding duplicate and non-meat records. Coffee-derived treatments consistently re-duced lipid-oxidation markers (TBARS, volatile aldehydes), often matching or exceeding BHA, BHT, ascorbic acid and rosemary, at doses from 0.025% to 10% w/w. Protein oxidation was less consist-ently controlled, and higher doses of green-coffee products altered colour via chlorogenic acid-myo-globin interactions; silverskin and husk showed favourable profiles. These findings support coffee by-products as viable circular-economy meat antioxidants, if dose selection balances efficacy against sensory constraints.

Keywords*: spent coffee grounds; coffee by-products; natural antioxidants; lipid oxidation; meat products*