

Abstract

The quality of dry roasted peanuts is highly dependent on storage conditions for preventing oxidation of fatty acids; however, changes in polyphenolics affecting antioxidant capacity due to co-oxidative reactions are unknown. The objective of this work was to evaluate oxidative stability of polyphenolics in peanut kernels with naturally varying rates of lipid oxidation. Three peanut varieties containing varying levels of oleic acid (normal, mid, and high) were dry roasted and evaluated for phytochemical changes over four months of storage at 20 and 35 °C; analyses included peroxide value, total and individual phenolics and antioxidant capacity. The normal oleic acid peanuts suffered up to 2.6-fold and mid-oleic acid peanuts 2-fold more lipid oxidation than the high-oleic acid peanuts stored at 35 °C. Changes in total soluble phenolics were initially similar among cultivars, but antioxidant capacity was found to decrease by 62%, on average, during storage at 35 °C, independently of rates of lipid oxidation. Free *p*-coumaric acid, three esterified derivatives of *p*-coumaric, and two esterified derivatives of hydroxybenzoic acid were the predominant polyphenolics present and their rates of change were similar among cultivars and independent of storage time or temperature. The high-oleic acid content was essential for prevention of lipid oxidation, but data indicated that co-oxidative reactions, affecting polyphenolic content during storage, were not great enough to significantly alter antioxidant capacity.