

UPLC-UV method to determine antioxidants in foodstuffs

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Antioxidants are an important group of food additives that have the ability to protect against detrimental change of oxidizable nutrients.

An UPLC (Ultra Performance Liquid Chromatography) method was used to determine six antioxidants in foodstuffs, namely propyl gallate (PG), octyl gallate (OG), dodecyl gallate (DG), tert-butylhydroxyanisole (BHA), butylated hydroxytoluene (BHT) and tert-butylhydroquinone (TBHQ).

Food samples were extracted with a mixture of acetonitrile and methanol. Chromatographic separation was performed with an Acquity® UPLC system with HSS T3 column (2.1 x 150 mm, 1.8 µm particle size). A gradient elution method was employed (solvent A: water with 0.1% formic acid; solvent B: 60:40 acetonitrile/methanol). The flow-rate was 0.3 ml/min.

Validation parameters such as limits of detection (LOD), linearity, repeatability and recovery were calculated. LOD was 50 ng/mL for DG and BHT and 25 ng/mL for PG, OG, BHA and TBHQ. The UPLC method improves and expands the characteristics of conventional HPLC. UPLC is environmental friendly by economizing organic solvents and reducing time of analysis by increasing the speed resolution and sensitivity.