# Functional and Antioxidant Characteristics of Phenolipids (quercetin-enriched lecithin) in Lipid Matrices

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Phenolics-enriched lecithin (phenolipids) results from the reaction of phospholipids with the selected phenolics in a nonpolar solvent. They are lipophillic substances freely soluble in nonpolar solvents (in which the hydrophilic moiety was not), and moderately soluble in fats. Liposomes, unlike phenolipids, are formed by mixing water-soluble substances with phospholipids without forming chemical bonds. This difference results in phenolipids being much better absorbed than liposomes or individual phenolic compounds. Preparation of phenolipids is recently described by complexing querectin with soy lecithin **[1]**. Phenolipids exhibited novel antioxidant properties in a triolein model system stronger than individual lecithin or querectin **[2]**.

The aim of this work was to optimize preparation of different structured phenolipids (phenolics bound or enriched polar lipids) from different plant extract sources as well as different types of polar lipids. Oxidative stability of rapeseed oil enriched with different phenolipids was also studied during accelerated oxidative storage. Functional (antioxidant, antiradical and antimicrobial) properties of different phenolipids were also characterized. Significant improvement in functional properties and oxidative stability of phenolipids and phenolipids-enriched rapeseed oil was recorded. Phenolipids are anticipated to play a vital role in efficient herbal drug delivery of a broad spectrum of protective phytochemicals. After selection of potential phytochemicals from medicinal plants, phenolipids can be developed for various therapeutic uses like cardiovascular, anti-inflammatory and anticancer activities. Moroever, phenolipids are anticipated to show their potential in cosmetics as anti-skin ageing agents and for the use of other nonpathogenic skin conditions.

[1] Ramadan MF (2008) Food Science and Technology-LWT 41: 581-587.

[2] Ramadan MF, Asker MMS (2009) Journal of Food Biochemistry 33: 557–571.