ONLINE ISSN : 1881-3984
PRINT ISSN : 1344-6606

Food Science and Technology Research
Vol. 15 (2009) , No. 1 pp.83-88

[PDF (814K)] [References]

Preparation of a Lemon Flavonoid Aglycone and its Suppressive Effect on the Susceptibility of LDL to Oxidation Following Human Ingestion

Yoshiaki MIYAKE[1)], Chika SAKURAI[2)], Mika USUDA[2)], Masanori HIRAMITSU[3)] and Kazuo KONDO[2)]

1) Faculty of Human Wellness, Tokaigakuen University
2) Institute of Environmental Science for Human Life, Ochanomizu University
3) Pokka Corporation Ltd.

(Received: July 4, 2008)
(Accepted: September 5, 2008)

Lemon flavonoid (LF) prepared from lemon peel predominantly contains eriocitrin as an antioxidant. It is indicated to have low bioavailability compared with lemon flavonoid aglycone (LFA), which predominantly contains eriodictyol. This study attempted to prepare LFA which has high bioavailability, using enzymes that are commonly used in the citrus industry, such as cellulase, naringinase, hesperidinase, and pectinase. LFA containing the highest amount of eriodictyol (19.4%) was prepared with naringinase, a debittering enzyme for citrus juice. Ten male normolipidemic subjects ingested LFA (3.7 g) after an overnight fast, and low-density lipoprotein (LDL) was prepared from 0-4 h plasma after intake of LFA. The LDL oxidizability was measured with lag time of the conjugated diene formation induced by an oxidative inducer. LDL in 0.5 h plasma after ingestion of LFA was shown to have a significantly longer lag time for oxidation than that before ingestion ($P<0.05$). LFA was suggested to have the resistance effect of LDL to oxidation *ex vivo*. Eriodictyol, homoeriodictyol, and hesperetin were not detected in plasma by HPLC analysis, but they were detected in plasma treated with β-glucuronidase and sulfatase. The flavonoids were suggested to be glucuro- and/or sulfo-conjugates and to be metabolites in plasma after ingestion of LEA.

Keywords: aglycone, eriodictyol, lemon flavonoid, LDL oxidation, naringinase

doi:10.3136/fstr.15.83

JOI JST.JSTAGE/fstr/15.83