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

Food Science and Technology Research
Vol. 14 (2008) , No. 3 pp.261-268

[PDF (916K)] [References]

Total Phenolic Content, Antioxidative, Anti-amylase, Anti-glucosidase, and Antihistamine Release Activities of Bangladeshi Fruits

Sheikh Julfikar HOSSAIN[1)3)], Iyo TSUJIYAMA[1)], Mikako TAKASUGI[2)], Md. Ashabul ISLAM[3)], Rajat Shuvra BISWAS[3)] and Hitoshi AOSHIMA[1)]

1) Applied Molecular Bioscience, Graduate School of Medicine, Yamaguchi University
2) Department of Applied Chemistry and Biochemistry, Faculty of Engineering, Kyushu Sangyo University
3) Biotechnology and Genetic Engineering Discipline, Khulna University

(Received: November 1, 2007)
(Accepted: February 5, 2008)

To seek out a cheap source of dietary polyphenols and antioxidants along with anti-amylase and anti-glucosidase activities, ethanol extracts of eleven cheap Bangladeshi fruits were investigated. The extracts were also examined for anti-allergic activity using rat peritoneal exudate cells exposed to the calcium ionophore A23187. *Phyllanthus emblica* (emblic myrobalan) had the highest total polyphenol content (339 mg gallic acid equivalent (GAE)/g), followed by *Syzygium cumini* (Indian blackberry; 192.3 mg GAE/g), and *Aegle marmelos* (wood apple; 53.7 mg GAE/g). *P. emblica*, and *S. cumini* also exhibited the most potent DPPH radical scavenging activity, with an IC_{50} of 2.1 and 8.6 μg/mL respectively. These extracts also showed promising reducing powers with *P. emblica* having the greatest such activity (optical density (O.D.) 1.66), followed by *S. cumini* (O.D. 1.34), at a concentration of 0.2 mg/mL. The extracts of *Artocarpus heterophyllus* (jackfruit) and *S. cumini* showed promising chelating activities. At a concentration of 1 mg/mL, *Dillenia indica* (chalta) showed the highest inhibition of α-amylase activity (60%), and *A. marmelos*, *D. indica*, *P. emblica*, *Spondias dulcis* (hog-plum) & *S. cumini* completely inhibited α-glucosidase activity (100%). Apart from *A. heterophyllus*, *D. indica* and *Phyllanthus acidus* (star-gooseberry), all other extracts inhibited the release of

histamine from the peritoneal exudate cells, with *S. cumini* having the strongest effect. These fruits therefore have activities beneficial to physiological health.

Keywords: antioxidant, anti-amylase, anti-glucosidase, anti-allergy, antihistamine release, fruits, polyphenol

doi:10.3136/fstr.14.261

JOI JST.JSTAGE/fstr/14.261