Investigation of Functional Properties and Phytochemical Screening of Selected Fruit Peel Powders

P.G.I. Dias, J.W.A. Sajiwanie and R.M.U.S.K. Rathnayake

Department of Food Science and Technology, Sabaragamuwa University, Belihuloya, Sri Lanka

Main solid waste in fruit processing industry is fruit peels. Manufacturing industries have to spend excess money, labor, and space to dispose them. Therefore, reducing, recycling or reusing such peels is a timely requirement. The aim of this study was to ascertain the total phenolic content (TPC; Folin–Ciocalteu method), and antibacterial activities (agar well diffusion method) and to screen the phytogenic chemical compounds (chemical methods to evaluate the presence of tannin, steroids and cardiac glycosides) of selected fruit peel powders to determine their suitability for use as natural food additives. In the present study, four varieties of fruit peels; pineapple, orange, yellow passion fruit and avocado were collected from fruit waste of Sri Lankan food industries. Water extracts and methanol extracts of dried samples (at 50□C until constant weight) were tested for TPC and antibacterial activity for six different pathogenic bacteria; *Staphylococcus aureus, Shigella dysenteriae, Escherichia coli, Listeria monocytogenes, Streptococcus pneumonia* and *Salmonella typhi*. According to the results, highest TPC was observed in the methanol extract of orange peel (15.83±0.40 GAE mg/g) while water extract of avocado peel (1.72±0.01 GAE mg/g) showed the least TPC. No antibacterial activity was observed for water extract except pineapple peel for *Salmonella typhi*. Antibacterial activity of methanol extract was higher than that of water extract. All samples contained cardiac glycosides while steroids are present only in orange peel. Pineapple peel and avocado peel were free of tannins. All the functional properties were less than the previous studies for raw peels. That may be due to prolonging drying time of fruit peel powders. Therefore, optimization of processing conditions for powder preparation is needed.

Keywords: Antibacterial, Antioxidant, Fruit peel powders, Phytochemicals