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Antioxidative behaviour of Malaysian plant extracts in model and food oil systems

I Jaswir¹, TH Hassan², MZM Said¹

¹Department of Biotechnology, ²Department of Computational and Theoretical Sciences,
Faculty of Science, International Islamic University Malaysia, Jalan Gombak 53100 Kuala Lumpur, Malaysia

Background – ‘Pegaga’ (*Centella Asiatica*) and ‘limau purut’ (*Citrus hystrix*) are two types of plant traditionally used in Malaysian local dishes. Recent studies showed that pegaga and limau purut leaves not only can be used as food ingredients, but also can benefit human health.

Objective - To investigate the antioxidative behaviour of the crude extracts of pegaga leaves, and limau purut leaves, peels, and stems in a linoleic acid model system and in palm olein system.

Design - Antioxidant activity of these local plants were analyzed using an oxygen consumption method and by differential scanning calorimetry (DSC). The antioxidant activity of these plants were then compared to the activity of rosemary and sage, two types of antioxidant commonly found in the market.

Outcomes - From the analysis using oxygen consumption method, it was found that among the samples evaluated, pegaga leaves had the longest time to reach the 50% oxygen in the chamber, with 90 min, meaning that this sample had the highest level of antioxidant activity. This was followed by the extracts of limau purut leaves (85 min), peels (60 min), and stems (39 min). Results from the DSC analysis showed that addition of pegaga leaves and limau purut samples to the palm olein in the system reduced the oxidation as evidenced by longer T_o of antioxidants-treated samples. Statistical analysis from this study showed that there was no significant difference between T_o of pegaga leaves and those of rosemary and sage. This meant that the antioxidant activity of pegaga leaves was comparable to the activities of rosemary and sage.

Conclusion - The finding from this study indicated that all samples used in this study had very good potential to be explored as sources of natural antioxidants.

Catechins are the major source of flavonoids in a group of Australian women

P Lyons-Wall¹, P Autenzio¹, E Lee², R Moss², S Gie¹, S Samman²

¹School of Public Health, Queensland University of Technology, Kelvin Grove, QLD 4059

²Human Nutrition Unit, School of Molecular and Microbial Biosciences, The University of Sydney, NSW 2006

Background - Evidence is emerging for the role of flavonoids in the prevention of degenerative diseases such as cancer and cardiovascular disease.

Objective: To determine the dietary intake of flavonoids in a group of Australian women.

Design: Twelve day weighed record data were available from 24 healthy young women, participating in a larger study on diet and hormones; mean \pm SD age was 32.7 ± 9.9 y and body mass index was 23.3 ± 4.1 kg/m². Dietary data were analysed for intake of 15 individual flavonoids, comprising four major subclasses: flavonols (quercetin, kaempferol, myricetin and fisetin), flavones (apigenin and luteolin), flavanones (hesperetin, naringenin and eriodictyol) and flavanes or catechins (epicatechin, epicatechin 3-gallate, epigallocatechin, epigallocatechin 3-gallate, catechin, gallocatechin). As limited data are available for the flavonoid content of Australian food and drink items, values were mainly sourced from published international data; intake was estimated utilising data for the aglycone form and for a limited number of glucosides converted to aglycone equivalents.

Results: Mean (SEM) daily intake in the group was 25.6 ± 2.5 mg/d for flavonols, 3.9 ± 0.7 mg/d for flavones, 22.6 ± 4.9 mg/d for flavanones and 76.1 ± 15.9 mg/d for catechins; total intake of flavonoids was 128 ± 19.9 mg/d. Major food sources in this group of women were: onions, apples (with skin), tea (green, black), olives and broccoli, for flavonols; fresh parsley and celery, for flavones; oranges, grapefruit and their juices, for flavanones; and tea (green, black), apples (with or without skin), red wine, dark chocolate and cocoa, for catechins.

Conclusions: To our knowledge these results are the first Australian data available on flavonoid intake. Catechins were the major subclass of flavonoids in this group of women, providing 59% of the total intake, followed by the flavonols (20%) and flavanones (18%), and with a smaller contribution from the flavones (3%). Our mean catechin intake was higher than that reported in Finnish (14.1 mg) or American (25.4 mg/d) populations, and comparable to that in a Dutch population (72 mg/d).