

Effect of *In-Vitro* Digestion on Antioxidant and Anti-Inflammatory Properties of Three Species of Edible Flowers

G. Janarny^{1*}, K.D.P.P. Gunathilake² and K.K.D.S. Ranaweera¹

¹*Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Gangodawila, Nugegoda 10250, Sri Lanka*

²*Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila 60170, Sri Lanka*

**gjanarny3@gmail.com*

Increasing risk of chronic diseases in the recent past is associated with the dietary patterns of individuals. Oxidative stress is the major cause for the development of these diseases, and inclusion of natural sources of antioxidants in the diet could reduce the risk of chronic diseases. Currently, edible flowers are regaining popularity as sources of antioxidants due to their phytochemical composition. However, there are not many studies reporting the changes in the phytochemical content and bioactivities of edible flowers subjected to *in vitro* digestion. The present study investigated the effect of *in vitro* digestion on the total phenolic content (TPC), total flavonoid content (TFC), total anthocyanin content (TAC), antioxidant and anti-inflammatory properties of *Sesbania grandiflora* (KM), *Clitoria ternatea* (NK) and *Cassia auriculata* (RW) flowers. Antioxidant property was assessed using hydrogen peroxide scavenging assay and nitric oxide radical scavenging assay. Anti-inflammatory property was evaluated using assays for inhibition of heat induced haemolysis and inhibition of egg albumin denaturation. The outcomes indicated that the highest TPC and TFC among the methanolic extracts were in RW whereas the highest TAC was in NK. After the gastric phase, in all the flowers TPC decreased significantly whereas TFC increased. Though methanolic extracts of KM expressed lowest percentage in inhibiting egg albumin denaturation (27.48%) there was no significant reduction in the activity after digestion and dialysis. Highest percentage of scavenging nitric oxide and hydrogen peroxide after dialysis was noted in RW. Ability to inhibit heat induced haemolysis decreased in all the phases of digestion in RW and NK whereas in KM it increased in the gastric and intestinal phases. In general, though digestion and dialysis decreased the antioxidant and anti-inflammatory properties of the flowers, digested fractions of RW flowers expressed higher antioxidant and anti-inflammatory properties compared to NK and KM flowers.

Keywords: Edible flowers, Antioxidant, Anti-inflammatory, *In vitro* digestion

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