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Antioxidant Capacity and Nutritional Value of Peels and Seeds of Selected Pomegranate (*Punica granatum* L.) Cultivars from Sri Lanka

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ABSTRACT

Purpose: *Nonedible portion of Pomegranate is reported to be rich with a diverse range of phytochemicals which embrace with health promotive features. Though antioxidant power and nutritive value of fruit juice are well known, knowledge of nonedible fraction is very poor. Hence, evaluation of antioxidant power and nutritional value of fruit peel and seed of pomegranates was targeted.*

Research Method: *IC_{50}, Ferric Reducing Antioxidant Power (FRAP), Total Phenolic (TPC), Total Flavonoid (TFC), Total Anthocyanin and pro-anthocyanidin Contents (ProAC) were determined. Nutritional value was studied by proximate analysis.*

Findings: *IC_{50}, TPC, FRAP and TFC values of peels were ranged from 4.6 to 41.1µg/mL, 318±1.77 to 478±5.62 mg Gallic acid equivalent/g, 4.270±0.83 to 6.690±0.15 mM Fe^{2+}/g and 52.64±0.24 to 75.99±0.849 Rutin equivalent mg/g respectively. Antioxidant power and TFC of all the peel extracts were well above as compared with juice and seed samples, the highest IC_{50} and TPC in Daya peel whereas the highest FRAP and TFC in Nimali and Kalpitiya red peels respectively. Kalpitiya red juice and peel had the highest TAC and ProAc.*

Proximate analysis revealed that Protein, lipid and fiber contents were higher in seeds than peels. Carbohydrate content of all the peels was higher than the seeds.

Research Limitations: *There were some practical limitations such as long dry spells and also finding suitable fields for the experiment, due to farmers' hesitation on possible yield reduction.*

Originality/ Value: *Findings reveal that selected cultivars of pomegranate peel possess exceptionally high antioxidant power and could be applied as an excellent source of natural antioxidant in future therapeutic and medicine and as a safer natural antioxidant in food industries. High nutrient contents in pomegranate by-products facilitate to develop nutritionally valuable components such as functional food ingredients and nutraceuticals.*

Keywords: *antioxidant activity, peel and seeds, Pomegranate, total flavonoid, total phenol, nutritional value*

INTRODUCTION

Pomegranate (*Punica granatum L.*, family Punicaceae), is used in folklore medicine for the treatment of various diseases. Because of the high nutritional and nutraceutical value of the juice, pomegranate has been a very popular fruit crop among the growers and consumers worldwide (Singh *et al.,* 2002). Pomegranate fruit juices rich in ellagtannins (ETs) proved their efficacy as antioxidant and anticancer agents, especially against breast and colon cancer (Moneim and Dkhil, 2011).

Pomegranate peels (pericarp, rind or hull) that amount to approximately 60% of the fruit weight

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