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Development of herbal tea using pomegranate peel powder from Sri Lankan pomegranate cultivars

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The antioxidant potential of the pomegranate peel of Sri Lankan pomegranate cultivars was well established in our previous work. Since its high antioxidant potential is well correlated with its anticancer properties, the possibility of developing an herbal tea using pomegranate peel powder (PPP) was targeted in the study. Dried pomegranate peel powder (PPP) from *Kalpitiya hybrid* (K), *Daya* (D) and *Nimali* (N) cultivars were packed in tea bags (Tb) and sachet packets (Ts) under aseptic condition at room temperature in a covered box for 24 weeks. Tea samples were prepared in two ways: by dipping tea bag (Tb) in hot water (tea samples Kw, Dw and Nw) and by directly adding peel powder in sachet packet (Ts) into hot water (samples Kws, Dws and Nws). Antioxidant capacity and the pH values of the prepared tea samples were monitored at every 3-week interval until the 24th week. Sensory evaluations were done twice, initially and after twelve weeks. Observed total phenolic content (TPC) (mg GAE/ g sample), total flavonoid content (TFC) (mg CHE/ g sample) and ferric reducing antioxidant power (PFRAP) (mmol AAE/ g sample) values were higher in Ts than in Tb. Observed TPC values of Kw, Dw and Nw slowly declined by ~73%, 59% and 66% ,respectively through 24-week period. Reduction of TFC values of Kw, Dw and Nw through 24-week period were approximately 46%, 49% and 52%, respectively. PFRAP values of Kw, Dw and Nw also slowly declined by approximately 65%, 66% and 60%, respectively, through the tested period. Reduction of TPC values for Kws, Dws and Nws were observed as ~40%~ 23% and ~6%, respectively. TFC values of Kws and Dws also slowly declined by ~ 27% and ~20%, respectively. Reduction of PFRAP values of Kws, Dws and Nws were observed as 25%, 35% and 30%, respectively. All these findings indicated that the decline in TPC, TFC and FRAP values through the 24-week period is less in Kws, Dws and Nws than in Kw, Dw and Nw. Tb had higher pH values than Ts. Pomegranate has been used widely by many peoples for more than thousand years. Microbial contamination even after six months was significantly below the countable level. It is below than 30 colonies. Hence, herbal tea preparations can be recommended as safe for consumption even at 6th month. All these findings suggest that antioxidant power of Ts is much higher than that of Tb and the declining antioxidant potential is considerably less in Ts over the 6 month period. Overall consumer acceptability of the tea samples was also at a moderate level.

Keywords: Pomegranate, Antioxidant potential, Herbal tea, Sensory evaluation, consumer acceptability