Effect of Traditional Cooking and Frozen Storage on Phenolic, Tannin and Flavonoid Content of Selected Vegetables

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Vegetables are good sources of natural antioxidants such as vitamins, carotenoids, flavonoids and other phenolic compounds. Cooking and frozen storage causes considerable changes in the nutritional and structural properties of the phenolic compounds and antioxidants of vegetables. The objective of this research was to compare the total phenolic, tannin and flavonoid content of selected raw vegetables such as Leeks, Carrot, Red onion, Beetroot, Brinjal, Tomato, Beans and Green chilli with traditional cooked and frozen ones by petroleum ether and ethanol extraction methods. Total phenolic content (TPC) of raw carrot showed highest amount (29.25±1.2 μgmL^{-1}) in petroleum ether extraction but in ethanol extraction highest amount of TPC was present in chilli (461.29±0.92 μgmL^{-1}). In ethanol extraction, all selected traditionally raw and frozen vegetables showed higher amount of TPC compare to traditionally cooked. The highest amount of tannin (0.37±0.92 μgmL^{-1}) was present in raw carrot in petroleum ether extraction but in ethanol extraction raw beans (5.17±0.69 μgmL^{-1}) showed highest amount of tannin. Ethanol extraction showed that traditional cooking and frozen condition reduced the tannin content in all the selected vegetables. There was no significant difference among traditionally cooked Carrot, Leeks and Beetroot in terms of tannin in petroleum ether extract. Traditional cooking condition increased the flavonoid content in all selected vegetables compare to raw and frozen condition in petroleum ether extraction. Frozen condition increased the flavonoid content in beetroot and onion in terms of ethanol extraction rather than raw and traditionally cooked vegetables. The study recommended that ethanol extraction is good for extract the total phenolic and tannin content and petroleum ether is good for extraction of flavonoids from vegetables. Traditional cooking is the suitable method for increase the flavonoid content in vegetables.

Keywords: Phenoles, Tannin, Flavonoids, Vegetables