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Determination of the phytochemical content and antioxidant activity of imported grapes present in Sri Lanka

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Countless studies have been conducted in the field of oxidative stress, owing to the fact that it results in a number of diseases. Antioxidants exist to prevent the adverse effects of oxidative stress by scavenging free radicals due to their oxidative and reductive properties. While both synthetic and natural antioxidants exist, research has found that natural antioxidants are more beneficial to health. Fresh fruits and vegetables are well-known sources of antioxidants, and grapes in particular are known for having rich antioxidant activity. However, studies conducted in Sri Lanka regarding this field are severely lacking and therefore the current study was conducted in order to rectify this, by investigating the phytochemical content and subsequent antioxidant activity of three imported varieties of grapes as well as their components (skin, pulp and seed) present in Sri Lanka. Extraction of samples were done using 100% methanol, and phytochemical content was measured by determining the total flavonoid content (TFC) and total phenolic content (TPC) by aluminium chloride and Folin-Ciocalteu methods, respectively. Antioxidant activity was determined using the phosphomolybdenum assay to obtain total antioxidant capacity (TAC), ferric ion reducing antioxidant power (FRAP) assay, and both DPPH and ABTS free-radical scavenging activities. Red grape seed produced the highest results out of all samples for all the assays followed by black grape skin, while it was discovered that skin extracts always produced higher results than pulp. Black grape skin showed the highest results for all assays out of the three skin samples. Of the pulp samples, black grape pulp showed the highest results for TFC, while green grape pulp gave the highest results for all the other assays. Among the phytochemical contents (TPC and TFC), it was also observed that phenols comprised a higher amount in all varieties of grapes and their components, although both the phytochemicals contributed to the antioxidant activity. Additionally, a positive correlation was discovered between the phytochemical content and antioxidant activity of all grape samples. It was concluded that of the three imported varieties of grapes available for consumption in Sri Lanka, the seeds of red globe grapes had the highest phytochemical content and antioxidant activity.

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