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The Natural Goodness of Purple Sweet Potato

Purple potatoes (*Ipomoea batatas L. Lam*), also known as purple sweet potatoes, are perennial herb from the Convolvulaceae family. The colour of their flesh can be from purple to dark purple, in which its vibrancy is contributed by the accumulation of acylated anthocyanins (Phomkaivon et al., 2018).

Purple sweet potato is a good source of dietary fiber, minerals and vitamins, as well as being rich in anthocyanins, total phenol content, and high antioxidant activity. The nutritional composition of purple sweet potato is beneficial to both humans and animals. It has been proven that the anthocyanin content in purple sweet potatoes is significantly higher than ordinary orange-fleshed sweet potatoes, similar to the anthocyanin content of blueberries, blackberries, cranberries, and grapes (Li et al., 2019).

Purple sweet potato anthocyanins (PSPAs) is one of the many varieties of anthocyanins. The acylation form of PSPAs gives purple sweet potatoes the ability to withstand high heat and contributes to good ultraviolet stability, making it an excellent natural pigment in food additives. Because of these traits, PSPAs are widely used as food additives by food manufacturers in China. Studies show that PSPAs have functional properties of antioxidation, anti-inflammation, anti-mutation which are beneficial for our health (Li et al., 2019).

Functional properties of Purple Sweet Potato Anthocyanins (PSPAs)

a) Antioxidant

PSPAs offer protection against the inflammatory progression of oxidative stress and induce a decline in the various oxidative stress markers. Oxidative stress is an imbalance of free radicals and antioxidants in the body. Free radicals in humans are produced through the metabolic processes and the presence of excessive free radicals would lead to the oxidation of lipids, proteins, DNAs, RNAs and sugar which are associated with cancer, Alzheimer's disease, Parkinson's disease, authoimmune deficiency, diabetes and others (Li et al., 2019).

b) Antimutagenic and Anti-Tumor Activities

The purple sweet potato variety with high content of cyanidin-type PSPAs can be considered as a superior physiologically functional food (Li et al., 2019). PSPAs could inhibit the growth of tumor cells in which many studies have produced positive results. The consumption of PSPAs could elevate glutathione peroxidase and superoxide dismutase levels and lower malondialdehyde levels, thus enhance the antioxidant activities to promote the inhibition of tumor cells (Li et al., 2019).

c) Liver Protection

Consumption of purple sweet potato beverage helps in reducing the level of hepatitis index enzymes in serum as PSPAs contributes in alleviating oxidative stress. In addition, purple sweet

potato has a significant inhibitory effect on liver illnesses caused by cholesterol and d-galactose. Other than that, PSPAs can effectively reduce the oxidative damage, and significantly reduce the incidence of liver lesions by inhibiting the production of reactive oxygen species (Li et al., 2019).

Application of Purple Sweet Potato Anthocyanins (PSPAs)

a) Food Industry

- Widely used as a natural pigment for food coloring due to its high stability, thus prolonging the shelf life of food.
- Can be processed into concentrate, paste and flour to be incorporated into food applications like noodles, breads, jams, crisps, candies, beverages, and alcoholic beverages.

(Li et al., 2019)

b) Pharmaceutical Industry

- Drugs or pills are usually distinguished by the differences of their colors, produced by using synthetic pigments. Long term consumption of these synthetic pigments would cause harmful effects to consumers.
- Therefore, PSPAs can be used as a safe and non-toxic natural pigment for pharmaceutical products.

(Li et al., 2019)

Purple sweet potatoes contains natural goodness of nutrients that bring beneficial effects to our health. It has been widely used as an edible food colorant due to its low price. This crop is

high yielding, drought tolerance and wide adaptability to various climates and farming systems. Hence, it has been broadly used for food and industrial applications (Ji et al., 2015).

References

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