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Thai underutilised fruit and vegetable species as a potential sources of antioxidants, minerals and vitamins

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Abstract

At present, when humanity is still facing persistent malnutrition, diseases of affluence are emerging at the same time. Furthermore, crop production focuses only on a very limited number of species requiring high inputs. The main reason for malnutrition mostly lies in the insufficient consumption of fruits and vegetables. These are irreplaceable sources of biologically active substances such as antioxidants that protect cells against oxidative damage, minerals that play a huge role in various biological processes such as transmitting nerve impulses, and vitamins that serve as antioxidants, coenzymes, cofactors, hormones, and others. Deficiencies of these substances can be fatal in the long run. Often ignored sources of these substances are underutilised crops which have many benefits such as high nutritional value, resistance to biotic stresses, and the ability to strengthen the food security of the country. Thailand is a part of the Indo-Burma Biodiversity Hotspot, one of the most biodiverse areas in the world, and provides various kinds of fruits and vegetables, including little-explored species. Also, Thai cuisine is rich in local unique ingredients and considered healthy. This review aimed to identify Thai underutilised fruit and vegetable species containing notable amounts of antioxidants, minerals, and vitamins. In this review, 73 underutilised species of Thai fruits and vegetables were found in the scientific literature. The most promising crops in the terms of antioxidants seem to be Durio kutejensis and Cosmos caudatus, in the terms of minerals Neptunia oleracea and Dracontomelon dao, and in the terms of vitamins, Aegle marmelos, Mangifera odorata, and Sesbania grandiflora. Some species including for example A. marmelos or S. grandiflora showed valuable contents of all 3 monitored parameters and therefore it would be appropriate to promote them more to locals as they could enrich their diet and increase the biodiversity of cultivated crops, financial incomes, and living standard. Also, such species could be used in industry to produce various food products. For 8 species, no data on antioxidant activity and contents of minerals and vitamins were available and it would be therefore appropriate to focus on their research as they may have nutritional potential.

Keywords: Edible plants, human nutrition, neglected crops, plant species, Southeast Asia, unexploited

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