

**Title** Antioxidant properties and bioactive constituents of some rare exotic Thai fruits and comparison with conventional fruits: *In vitro* and *in vivo* studies

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### **Abstract**

The aim of this research was to investigate the bioactivity of durian, snake fruit and mangosteen, rare exotic Thai fruits. These fruits were compared among them and with conventional fruits: durian with mango and avocado, and snake fruit with mangosteen and kiwifruit in order to find the preferable diet for human consumption. The contents of polyphenols, flavonoids, flavanols, tannins, anthocyanins, ascorbic acid and carotenoids, and the level of antioxidant potential by ABTS, DPPH, FRAP and CUPRAC in different extracts (methanol, water, acetone, and hexane) were determined. The presence of polyphenols (flavonoids and phenolic acids) in the investigated samples was characterized by Fourier transform infrared (FT-IR) spectroscopy and three-dimensional fluorimetry (3D-FL).

The *in vivo* studies were carried out on 25 male Wistar rats, divided into 5 diet groups, each of 5. During 30 days of the experiment the rats of all 5 groups were fed basal diet (BD), which included wheat starch, casein, soybean oil, vitamin and mineral mixtures. The rats of the Control group were fed only the BD. The BD of the other 4 groups was supplemented with 1% of nonoxidized cholesterol (NOC) (Chol group), 1% of NOC in each group and 5% of lyophilized fruits: durian (Chol/Durian), snake fruit (Chol/Snake), mangosteen (Chol/Mangosteen). After the experiment diets supplemented with exotic fruits significantly hindered the rise in plasma lipids and hindered the decrease in the plasma antioxidant activity. In conclusion, the contents of bioactive compounds and the antioxidant potential are relatively high in the studied fruits and varied among them depending on the extraction procedure. FT-IR and 3D-FL can be used as additional tools for identification and comparison of bioactive compounds. Supplementation of diets with exotic fruits positively affects plasma lipid profile and antioxidant activity in rats fed cholesterol-containing diets.