Title Functional Activities and Substances in Litchi Fruit

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Abstract

Litchi fruit is loved by Asian peoples and also gaining popularity among westerns. The flesh of litchi is delicious in taste and rich in nutrients including carbon hydrates, vitamins and minerals. However, consumers have been bothered by the so call “hot nature” of litchi flesh in terms of Chinese traditional medical concept, which leads to disorders like eczema, throat itching or stomachache in some litchi takers. Chemical nature of “hotness” of litchi is not understood, although there is a study showing it involves induction of prostaglandin E2 (PGE2) by macrophages. German researcher Hoppe investigated the disorder-causing nature of through isolating proteinic allergens presenting in litchi aril. His group was able to isolate a 28 kDa allergenic polypeptide, which might functional triosephosphate isomerase according to N end amino acid sequence analysis. Recent studies have revealed that the non-edible skin and seed contain valuable health-promoting functional substances. Numerous studies have shown rich phenolic compounds including flavonols, flavones, flavanones, anthocyanins, epicatchin and proanthocyanidins in litchi skin. These compounds have strong antioxidant activities. Other substances with antioxidant activities in litchi skin are polysaccharides, vitamin C, glutathione and carotenoids. A research group led by Wang in Sichuan University proved in vitro and in vivo that water soluble ethanol extracts from litchi pericarp had a strong anticancer activity against hepatocellular carcinoma and human breast cancer. The discovery lists litchi skin as a new source for anticancer drug, although much effort has to be made to clarify the chemical nature of the anticancer substances in litchi skin. Litchi seed has long been used as traditional medicine in China. Studies have shown that litchi seed extracts have antivirus activity and are effective in lowering blood sugars and lipids. There are also a number of studies exploring chemical compositions in litchi seed. However, few identified compounds in litchi seeds have been clearly related to its functional activities up till now.