



DRYING CHARACTERISTICS, CHEMICAL CONSTITUENTS, VOLATILES PROFILES OF DIFFERENT ROOT SYSTEMS FROM HAIRY FIG (*FICUS HIRTA VAHL.*) AND ANTIOXIDANT ACTIVITY

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ABSTRACT

Hairy fig (*Ficus hirta* Vahl.) root is a traditional medicinal and food homologous plant in China. Due to the lignified roots are extremely difficult to cut and package, postharvest treatment is very difficult. Therefore, when the roots of the hairy fig are used as a soup ingredient, the root cortex is simply peeled off and used. In order to promote the development and utilization of hairy fig root, chemical composition, volatile profiles and antioxidant activities of entire root (ER), root cortex (RC) and root internal tissue (RIT) of hairy fig were investigated. Hairy fig root was rich in fat, protein, soluble sugar, polyphenols, flavones and other nutrients, which had significant difference in ER, RC and RIT ($P < 0.05$). Chemical components and nutrients were highest in RC, and lowest in RIT, as well as psoralen and bergapten. In ER, RC and RIT, content of psoralen was 0.70, 0.77, 0.32 mg/g, and 0.27, 0.42, 0.14 mg/g for bergapten. Phosphorus, potassium, magnesium, calcium were the main minerals, and arginine was the main free amino acid. There were 47 volatile components detected in ER, RC and RIT, where aldehydes and heterocyclic compounds were the dominant components. The relative level of aldehydes was 16.98~34.09%, and 6.71~45.23% for heterocyclic compounds. In addition, total relative amount of volatile components was 75.68% in RC, but 57.94% in RIT. From chemical components, nutritional components and volatile components content, the quality of RC was better than ER and RIT. The results might be related to chemicals accumulation position and the physiological structure of different parts of plants. According to antioxidant activity, ER, RC and RIT have scavenging activity of 2,2'-azino-bis (3-ethylbenzthiazoline-6-sulphonic acid) (ABTS), 2,2-diphenyl-1-picrylhydrazyl (DPPH) and hydroxyl radicals. The half inhibitory concentration (IC₅₀) of RC on ABTS, DPPH and hydroxyl radical were 3.51, 0.08 and 1360.40 mg/mL, respectively, which were lower than ER and RIT. Based on the drying process of the samples, the RC and RIT exhibited the best drying efficiency. All in all, from the point of view of saving energy and quality, RC not only had better quality but need less energy to dry. These results provided a reference for the development and utilization of hairy fig root cortex as a raw material in medicine, functional food or dietary additives.