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### **Effects of Cultivation Techniques and Processing on Antimicrobial and Antioxidant Activities of *Hericium erinaceus* (Bull.:Fr.) Pers. Extracts**

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#### **Summary**

*Hericium erinaceus*, a temperate mushroom, is currently cultivated in Malaysia. As cultivation and processing conditions may affect the medicinal properties, antimicrobial and antioxidant properties of locally grown *H. erinaceus* have been investigated. The fruitbodies that were fresh, oven-dried or freeze-dried were extracted with methanol. Their properties were compared to those exhibited by mycelium extract of the same mushroom. Various extracts of *H. erinaceus* inhibited the growth of pathogenic bacteria but not of the tested fungus. Mycelium extract contained the highest total phenolic content and the highest ferric reducing antioxidant power (FRAP). The fresh fruitbody extract showed the most potent 1,1-diphenyl-2-

picrylhydrazyl (DPPH) radical scavenging activity. However, oven-dried fruitbody extract was excellent in reducing the extent of  $\beta$ -carotene bleaching. The total phenolic content and total antioxidant activity in the oven-dried fruitbody extract was high compared to the freeze-dried or fresh fruitbody extract. This may be due to generation and accumulation of Maillard's reaction products (MRPs), which are known to have antioxidant properties. Thus, the consumption of *H. erinaceus* fruitbody grown in tropical conditions may have health promoting benefits. Furthermore, the production of *H. erinaceus* mycelium in submerged cultures may result in standardized antioxidant formulation for either human nutrition or therapy. Hence, it has been shown that the processing of fruitbody and not the cultivation conditions affects the selected bioactive properties of *H. erinaceus*.

*Key words:* *Hericiium erinaceus*, antioxidant activity, antimicrobial activity, fruitbody, mycelium

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