Chemical composition, antioxidant and antibacterial properties of the essential oils of Etlingera elatior and Cinnamomum pubescens Kochummen

ABSTRACT

BACKGROUND: Plant essential oils are widely used as fragrances and flavours. Therefore, the essential oils from the leaves of Cinnamomum pubescens Kochummen (CP) and the whole plant of Etlingera elatior (EE) were investigated for their antioxidant, antibacterial and phytochemical properties. RESULTS: CP and EE were found to contain appreciable levels of total phenolic contents (50.6 and 33.41 g kg(-1) as gallic acid equivalent) and total flavonoid contents (205.6 and 244.8 g kg(-1) as rutin equivalent), respectively. DPPH free radical scavenging activity of CP is superior to EE (P < 0.05) showing IC(50) of 77.2 and 995.1 µg mL(-1), respectively. Methicillin-resistant Staphylococcus aureus (MRSA), Bacillus subtilis, Pseudomonas aeruginosa and Salmonella choleraesuis were tested against CP and EE. Only MRSA was the most susceptible bacteria to CP. GC/MS studies resulted in the identification of 79 and 73 compounds in CP and EE, respectively. The most abundant components of EE included β-pinene (24.92%) and 1-dodecene (24.31%). While the major compound in CP were 1,6-octadien-3-ol,3,7-dimethyl (11.55%), cinnamaldehyde (56.15%) and 1-phenyl-propane-2,2-diol diethanoate (11.38%). CONCLUSION: This study suggests that the essential oils from Cinnamomum pubescens Kochummen and Etlingera elatior could be potentially used as a new source of natural antioxidant and antibacterial in the food and pharmaceutical industries.

Keyword: Antibacterial activities; Antioxidant; Chemical composition; Cinnamomum pubescens Kochummen; Etlingera elatior