

Antioxidant activity, and volatile and phytosterol contents of *Strobilanthes crispus* dehydrated using conventional and vacuum microwave drying methods

ABSTRACT

The preservation of active constituents in fresh herbs is affected by drying methods. An effective drying method for *Strobilanthes crispus* which is increasingly marketed as an important herbal tea remains to be reported. This study evaluated the effects of conventional and new drying technologies, namely vacuum microwave drying methods, on the antioxidant activity and yield of essential oil volatiles and phytosterols. These drying methods included convective drying (CD) at 40 °C, 50 °C, and 60 °C; vacuum microwave drying (VMD) at 6, 9, and 12 W/g; convective pre-drying and vacuum microwave finish drying (CPD-VMFD) at 50 °C and 9 W/g; and freeze-drying (FD). GC–MS revealed 33 volatiles, and 2-hexen-1-ol, 2-hexenal, 1-octen-3-ol, linalool, and benzaldehyde were major constituents. The compounds β -sitosterol and α -linolenic acid were the most abundant phytosterol and fatty acid, respectively, in fresh *S. crispus*. The highest phenolic content was achieved with CD at 60 °C. The highest antioxidant activity was obtained with CD at 40 °C and VMD at 9 W/g. On the contrary, the highest total volatiles and phytosterols were detected with CD at 50 °C and VMD at 9 W/g, respectively. This study showed that CD and VMD were effective in producing highly bioactive *S. crispus*. A suitable drying parameter level, irrespective of the drying method used, was an important influencing factor.

Keyword: *Strobilanthes crispus*; Drying technology; Vacuum microwave drying; Antioxidant activity; Essential oil volatile compound; Phytosterol