

Superheated Water Extraction of Essential Oils from *Cinnamomum zeylanicum* (L.)

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ABSTRACT:

Introduction – Superheated water extraction (SHWE) potentially provides an environmentally friendly and clean extraction technique which uses a minimum or no organic solvent. The scope and limitations of the technique have still to be fully explored.

Objective – To investigate the application of SHWE to cinnamon (*Cinnamomum zeylanicum* L.) bark and leaves as typical plant materials to determine if this extraction method can yield a higher quality oil.

Methodology – Samples of cinnamon bark or leaves were extracted at 200°C with water under pressure. The essential oils were obtained from the aqueous solution using a solid phase extraction cartridge and were then examined by GC-MS.

Results – Using superheated water extraction, cinnamon bark oil with over 80% cinnamaldehyde and cinnamon leaf oil containing up to 98% eugenol were obtained. Alternative solvent extraction methods were also studied but led to emulsion formation apparently because of the presence of cellulose breakdown products.

Conclusion – Superheated water extraction offers a cheap, environmentally friendly technique with a shorter extraction time than hydrodistillation and yielded a higher quality oil with a higher proportion of eugenol than hydrodistillation. Copyright © 2010 John Wiley & Sons, Ltd.

Keywords: cinnamon bark; superheated water extraction; essential oils; cinnamaldehyde; eugenol; *Cinnamomum zeylanicum* (L.)