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Liquid CO₂ extraction of essential oil from Star anise fruits (*Illicium verum* H.)

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Abstract

Essential oil from dried Star anise fruits (*Illicium verum* H.) was extracted with liquid CO₂. The yield and the time of extraction were compared with that of the conventional steam distillation method. Extraction with liquid CO₂ yielded 9.8% more essential oil than steam distillation. The anethole contents in oils obtained by the two methods were not significantly different and were in the range of 89–92% of the total oil. The particle size of 0.425–0.710 mm and the time of 90 min were found to be optimum for both steam distillation and liquid CO₂ extraction. Two mathematical models were used to describe the relationship between the yield and time of extraction. Langmuir's adsorption model fitted the data better than the simple exponential model. Extraction of essential oil from Star anise fruits with liquid CO₂ was better than steam distillation in terms of energy saving, product yield and product quality.



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Liquid CO₂ extraction of essential oil from star anise fruits (*Illicium verum* H), the trajectory, despite external influences, undermines the crystal base.

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