

ABSTRACT

Steam distillation extraction of the essential oil of anise, *Pimpinella anisum*

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The essential oil of anise, *Pimpinella anisum* was extracted by steam distillation. The parameters and conditions were varied in order to optimise the extraction. The study was conducted at the laboratory and the industrial scales. The conditions studied in the laboratory were the effect of the nature of the plant material, the effect of storage on the essential yield, the effect of the above conditions on the kinetics of extraction and the temperature for the ideal essential oil/water separation.

On the industrial scale, the parameters investigated were the maturity of the plant, the density of the charge packing, the effect of the steam flow relative to the weight of plant material on the yield and losses of the oil. The kinetics of extraction at varying steam flow rates was also investigated.

Crushed leaves stored for 48 hours prior to distillation produced the highest yield of essential oil. Crushed leaves and branches produced a yield of 1.99%. The temperature range for effective separation of essential oil and water was 40-45° C. Mature plants produced a higher yield of essential oil and a charge density of 0.20-0.24 tonne/m³ produced consistent yields. The steam flow/tonne of plant material did not have a direct effect on the essential oil yields and losses.

Key words: Ronah Persad; essential oil; distillation; *Pimpinella anisum*; anise;

kinetics.