

OD4. Improvement of extracting tocopherols and tocotrienols from rice bran

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Objectives

Aiming at industrial utilization of rice bran as a source for vitamin E, various conditions to extract tocopherols and tocotrienols from fresh bran powder, bran pellet, and crude oil (hexane extracts of bran) were tested and the efficiency of extraction was compared.

Materials and Methods

- o. Materials : Rice bran in form of powder, pellet, and crude oil
- o. Tested methods : extracting solvent, bran to solvent ratio, conditions for saponification such as temperature, duration, and the amount of KOH addition
- o. Tocopherol and tocotrienol analysis: by HPLC

Results

- o. Hexane seemed the most practical solvent for tocopherol and tocotrienol extraction.
- o. The practicality of bran form was in descending order of crude oil > pellet > powder.
- o. The optimal crude oil amount to be added into 50 mL EtOH was 7.5 to 10 g
- o. Based upon response surface analysis, the optimal saponification temperature and duration was 83.7°C and 18 min, respectively when 5 g crude oil was added into 50 mL EtOH and 2 mL 80% KOH was used for extraction.

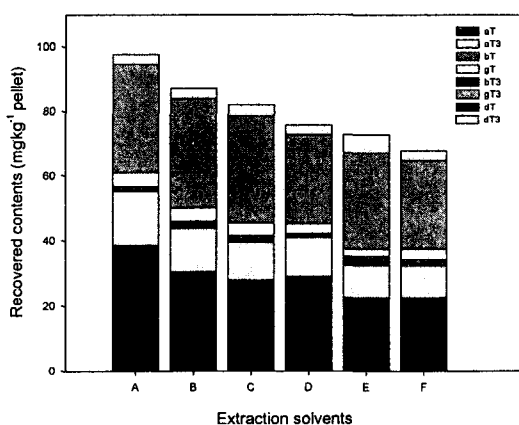


Fig. 2. Comparative efficiency of extracting tocopherols (T) and tocotrienols (T3) from rice bran among different extraction solvents. A: petroleum ether, B: ethyl ether, C: acetone, D: heptane, E: hexane, F: isopropyl alcohol.

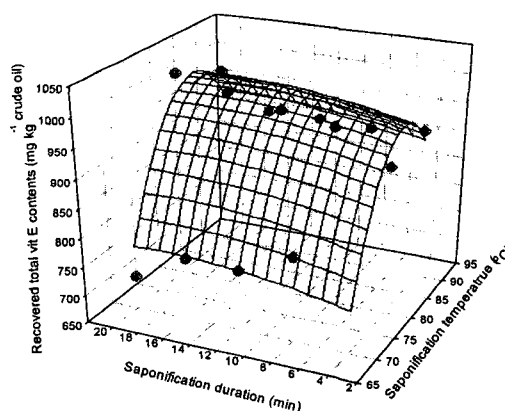


Fig. 3. Interactive effects of temperature and duration for saponification on recovery of total vit. E from rice bran crude oil.

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