

# Ethanol Extraction Process for Edible Groundnut Oil

## Step-by-Step: Ethanol Extraction of Edible Groundnut Oil

### What Youll Need:

#### Materials:

- Clean, dry groundnuts (shelled and skinned)
- 95% food-grade ethanol (ethanol:peanut ratio ~ 3:1 by volume)
- Distilled water (for rinsing if needed)

#### Equipment:

- Blender or grinder
- Glass or stainless steel container (for soaking)
- Cheesecloth or fine mesh filter
- Funnel
- Separating funnel (optional, for cleaner phase separation)
- Heating source (e.g., water bath, hot plate)
- Evaporator (or pan for low-heat ethanol removal)
- Storage bottles (preferably amber glass)

### Extraction Procedure

#### Step 1: Prepare the Groundnuts

- Roast lightly (optional) to improve oil release and aroma.
- Cool, then grind or blend the groundnuts into a coarse paste or meal. A finer texture gives better oil yield.

#### Step 2: Mix with Ethanol

- Place the groundnut paste into a clean glass or stainless-steel container.
- Add 95% food-grade ethanol in a ratio of about 3 parts ethanol to 1 part groundnut paste (v/v).
- Stir thoroughly to ensure all particles are in contact with ethanol.

#### Step 3: Soak and Extract

- Let the mixture soak for 612 hours, stirring occasionally.
- This allows ethanol to dissolve the oil and other fat-soluble compounds.

#### Step 4: Filter the Mixture

- After soaking, filter the solution using cheesecloth or a fine filter.
- Squeeze or press well to collect all ethanol-oil extract.
- Optionally, repeat soaking one more time with fresh ethanol for maximum yield, then combine the filtrates.

#### Step 5: Separate the Oil

- Let the filtered ethanol-oil solution sit or pour it into a separating funnel.
- Allow it to settle for 24 hours. Water and impurities (if any) will settle at the bottom.
- Carefully collect the upper ethanol-oil layer.

#### Step 6: Evaporate the Ethanol

- Pour the ethanol-oil mixture into a wide pan or evaporator.
- Gently heat (under 60C) using a water bath or low flame to evaporate ethanol.
- Stir frequently and ensure good ventilation. Ethanol is flammable!

Note: You can recover and reuse the ethanol by collecting the vapor via a condenser setup if available.

#### Step 7: Collect and Store the Oil

- Once ethanol is fully evaporated, youre left with pure groundnut oil.
- Let the oil cool, then store it in clean, airtight, amber glass bottles to preserve quality.

#### Important Notes:

- Ensure the ethanol used is food-grade (USP or FCC) not denatured or industrial ethanol.
- Ethanol must be completely removed before using the oil.
- Oil may need light filtering again if any solids remain after evaporation.

#### Output:

- High-quality, safe edible groundnut oil
- Mild peanut aroma
- Light amber or golden color