

## Natural Color Extraction Method for Sorrel (*Hibiscus sabdariffa*)

### Goal:

Extract a **deep red/burgundy colorant** rich in **anthocyanins** that matches the intensity, stability, and clarity of synthetic FD&C Red No. 3 or Red No. 40.

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### Method: Cold Acidified Aqueous Extraction

#### Materials:

- Fresh or dried **sorrel calyces**
  - **Distilled water**
  - **Citric acid** (or lemon juice)
  - **Fine mesh strainer or cheesecloth**
  - Clean glass jars or stainless-steel container
  - **Food-safe preservative** (optional: potassium sorbate)
  - pH test strips (optional for standardization)
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### Step-by-Step Extraction Procedure:

#### 1. Preparation

- **Wash** fresh calyces thoroughly to remove dust/debris.
- Use **100g of dried** or **300g of fresh** sorrel for every **1 liter** of water.

#### 2. Acidified Soaking

- In a **non-metallic container**, mix:
  - 1L **distilled water**
  - 1.5–2g **citric acid** (pH adjusted to ~3.0–3.5)
- Add sorrel calyces.
- Cover and let **soak for 24–36 hours** at **cool room temperature** (~18–22°C).
- Stir 2–3 times daily for even extraction.

#### 3. Filtration

- Strain the liquid using a **fine sieve or cheesecloth**.
- Repeat filtration for clarity (double-filter if needed).

#### 4. Concentration (Optional)

- If a **stronger pigment** is desired, gently reduce liquid via **low-heat simmering** (not boiling) for 15–20 minutes.
- Do **not exceed 60°C**, as heat degrades anthocyanins.

#### 5. Preservation

- Add **0.1% potassium sorbate** (1g per liter) if the extract will be bottled and stored.
- Store in **amber glass bottles** at 4–8°C.

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#### Resulting Product:

- A **vibrant, pH-sensitive red extract**
- Turns **purple/blue** in alkaline conditions
- Ideal for **beverages, sauces, cosmetics, soaps**

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#### Quality Tips:

- Maintain **acidic pH (~3.0)** to stabilize the red color.
- Use **low-oxygen processing** if possible, to prevent oxidation.
- Add a small amount of **glycerin** or **ascorbic acid** for antioxidant support in cosmetic use.

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#### Shelf Life:

- Refrigerated: **4–6 weeks**
- Frozen: **3–6 months**
- Dried (powdered extract): **up to 1 year**

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