



# Calendula extract

derived from the flowers of the *Calendula officinalis* plant, is widely used in skincare for its soothing, anti-inflammatory, and healing properties. It is commonly found in products designed to calm irritated skin and support skin repair.

## Chemical Properties:

### 1. Chemical Composition:

- **Calendula Extract** contains various bioactive compounds that contribute to its beneficial effects, including:
  - **Flavonoids:** Key flavonoids in calendula include quercetin, kaempferol, and rutin, which possess antioxidant and anti-inflammatory properties.
  - **Triterpenes:** These include compounds like faradiol and oleanolic acid, which have anti-inflammatory and antimicrobial effects.
  - **Carotenoids:** Calendula contains carotenoids such as lutein and zeaxanthin, which contribute to its antioxidant and skin-soothing properties.
  - **Saponins:** These compounds have mild detergent properties and can aid in cleansing the skin.

### 2. Chemical Structure:

- **Flavonoids:** Flavonoids like quercetin have a structure consisting of two benzene rings connected by a three-carbon bridge, with additional hydroxyl groups.
- **Triterpenes:** Triterpenes have a complex structure with a core triterpenoid ring system, often including additional functional groups like hydroxyl or carboxyl groups.
- **Carotenoids:** Carotenoids are tetraterpenoids with a long chain of conjugated double bonds, which give them antioxidant properties.

### 3. Physical Properties:

- Calendula extract is typically a yellow to orange liquid or powder, depending on the concentration and processing method. It has a slightly floral, herbaceous odor.
- It is soluble in water and alcohol, which makes it suitable for various skincare formulations.

### 4. Stability:

- Calendula extract is relatively stable when stored in cool, dark conditions. However, its effectiveness can be reduced if exposed to light, heat, or air. To ensure stability, it is often included in formulations with preservatives or stored in opaque containers.

## Function and Uses:

### 1. Anti-Inflammatory:

- Calendula extract has strong anti-inflammatory properties, which help reduce redness, swelling, and irritation. It is beneficial for calming inflamed skin conditions such as eczema, dermatitis, and sunburn.

2. **Soothing:**

- The extract has soothing effects that can alleviate discomfort from minor skin irritations, insect bites, and rashes. It helps to calm and cool the skin, providing relief from various forms of irritation.

3. **Healing:**

- Calendula promotes wound healing and skin regeneration. It accelerates the repair of damaged skin and can be effective for minor cuts, abrasions, and bruises.

4. **Antioxidant:**

- The flavonoids and carotenoids in calendula extract offer antioxidant protection by neutralizing free radicals. This helps protect the skin from oxidative stress and premature aging.

5. **Antimicrobial:**

- Calendula exhibits mild antimicrobial properties that help to inhibit the growth of bacteria and fungi, making it useful in preventing infections and supporting skin health.

6. **Moisturizing:**

- Calendula extract has moisturizing properties that help to maintain skin hydration and improve overall skin texture.

