

# Witch hazel

derived from the bark and twigs of the *Hamamelis virginiana* plant, is a popular botanical ingredient in skincare due to its astringent, anti-inflammatory, and soothing properties. It is commonly used to address issues such as acne, inflammation, and excess oil.



## Chemical Properties:

### 1. Chemical Composition:

- **Witch Hazel Extract** contains a variety of active compounds, including:
  - **Tannins:** These are polyphenolic compounds that have astringent properties, helping to tighten and tone the skin. The primary tannins in witch hazel are hamamelitannin and ellagic acid.
  - **Flavonoids:** These include compounds such as quercetin and rutin, which have antioxidant and anti-inflammatory effects.
  - **Essential Oils:** Witch hazel contains small amounts of essential oils, which contribute to its antimicrobial and soothing properties.
  - **Saponins:** These are compounds with mild detergent properties that can help cleanse the skin.

### 2. Chemical Structure:

- **Tannins:** The tannins in witch hazel are complex polyphenolic structures, often characterized by multiple hydroxyl groups attached to aromatic rings.
- **Flavonoids:** Flavonoids like quercetin have a structure that includes two benzene rings connected by a three-carbon bridge, with additional hydroxyl groups.
- **Saponins:** These are glycosides with a structure that includes a sugar component attached to a steroid or triterpenoid aglycone.

### 3. Physical Properties:

- Witch hazel extract is typically a yellow to brownish liquid, though the color can vary depending on the concentration and processing method. It has a slightly astringent, herbal scent.
- It is soluble in water and alcohol, making it easy to incorporate into various skincare formulations.

### 4. Stability:

- Witch hazel extract is relatively stable under normal storage conditions. However, its effectiveness can diminish over time if exposed to light, heat, or air. To maintain its efficacy, it is often packaged in opaque or airtight containers.