

TECHNICAL DATA SHEET

Product Name: Banana Infused Oil

INCI Name: Musa Sapientum (Banana) Fruit Extract, Helianthus Annuus Seed Oil, Prunus Amygdalus Dulcis Oil, Tocopherol

CAS: 89957-29-3, 8001-21-6, 8007-69-0, 59-02-9

Botanical Name: Musa sapientum

Chemical Classification: Mixture, Plant oil extract (lipophilic macerate)

Functional Category: Skin conditioning agent ~ Occlusive, Emollient ~ Skin conditioner, Antioxidant

Maceration Type: Ultrasonic maceration, cold process

Production Method: Banana infused oil is obtained through ultrasonic extraction using sound waves at frequencies between 20-25 kHz. These ultrasonic waves generate microscopic bubbles in the carrier oil containing the banana extract, causing a phenomenon known as cavitation. Cavitation leads to extreme localized pressure and temperature conditions that rupture plant cell walls, releasing active compounds such as essential oils, flavonoids, carotenoids, and sterols. The extraction is carried out at 25°C to preserve heat-sensitive components. The carrier oils used are cold-pressed linoleic-type sunflower oil, which is rich in essential linoleic acid and contains a lower amount of oleic acid, and sweet almond oil. Tocopherol (vitamin E) is added as a natural preservative to enhance shelf life and maintain the product's natural profile. During the extraction, the suspension vessel is cooled in an ice-water bath to prevent temperature rise. The ultrasonic treatment is applied in short pulses with breaks in between. Once completed, the infused oil is filtered to obtain a clear, ready-to-use product. This method is more efficient than traditional maceration, allowing for higher yield and shorter extraction time.

Description: The most important bioactive compounds in banana infused oil are tocopherols (vitamin E), which act as potent lipophilic antioxidants. They protect cell membranes from oxidative damage and help stabilize cosmetic formulations. Beta-carotene, a provitamin A, is also present and can be converted into retinol in the skin, promoting epidermal regeneration, improving skin tone and texture, and offering protec-

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tion from UV-induced free radicals. The oil also contains lipophilic flavonoids and triterpenes that provide a soothing effect, reduce irritation, and support the skin's natural barrier function. Although present in smaller amounts, these compounds work synergistically to enhance the oil's regenerative and protective properties. Banana infused oil has a light fruity scent and a pale yellow to golden color, which may vary depending on the carrier oil used, maceration temperature, and extraction duration. Its pleasant, non-greasy texture makes it suitable for various formulations. In cosmetics, it is used as an emollient to soften the skin, improve elasticity, and restore the damaged lipid barrier. It is especially beneficial for dry, dehydrated, mature, and sensitive skin. It is also effective in hair treatments, where it coats the hair, reduces moisture loss, and prevents dryness. It should be incorporated into the formulation during the cool-down phase to preserve the integrity of bioactive ingredients. Due to its mild action and pleasant scent, it is also suitable for products intended for children or for use on sensitive areas such as the skin around the eyes.

Bioactive Compounds: Key bioactive constituents in banana infused oil include various forms of tocopherols (alpha-, beta-, and gamma-tocopherol), which act as powerful antioxidants, protecting cell membranes from free radical damage. Beta-carotene, a provitamin A, supports epidermal renewal, improves skin tone and resilience, and enhances defense against external aggressors, particularly UV radiation. The oil also contains lipophilic flavonoids like naringenin and quercetin, which contribute to anti-inflammatory effects and strengthen skin microcirculation. Phytosterols especially stigmasterol, campesterol, and beta-sitosterol are present as well, helping stabilize membranes and support skin barrier repair. Triterpenes such as lupeol and ursolic acid, although present in trace amounts, add soothing and reparative effects. Depending on the carrier oil used in the infusion, additional beneficial lipids may also be present. Thanks to its rich composition, banana infused oil functions as both an emollient and an active ingredient in products for dry, mature, and sensitive skin. Its gentle yet nourishing nature makes it suitable even for delicate areas like the skin around the eyes, and for baby care products. It's important to note that hydrophilic components found in banana fruit-such as natural sugars (glucose, fructose, sucrose), free amino acids (e.g., tryptophan), and fruit acids (malic and citric acid)-do not transfer into the oil phase and therefore do not influence the cosmetic properties of the infused oil. Similarly, the mineral content of the fruit, including potassium, magnesium, zinc, phosphorus, iron, and calcium, remains in trace amounts in the oil and has no significant topical role.

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Benefits:

- Hydrates the skin thanks to its natural emollient content.
- Soothes irritation and redness, particularly on sensitive skin.
- Provides antioxidant protection through phenolic compounds.
- Enhances skin tone and evens out complexion.
- Supports epidermal regeneration.
- Leaves the skin soft and refreshed without stickiness.
- Helps shield the skin from environmental stressors.
- May contribute to gentle brightening of hyperpigmented areas.

Usage: Banana infused oil is used as an emollient and active component in formulations designed for dry, mature, and sensitive skin. In moisturizers, nourishing creams, body balms, and lotions, it is added at 2% to 5% to help soften skin and restore the lipid barrier. In oil-based serums and treatments for mature skin, concentrations up to 10% can be used depending on the desired texture and accompanying oils. For hair care products, it is used at up to 3% to provide softening effects without weighing down the hair. It should always be added during the cool-down phase to preserve its bioactive compounds.

Animal Testing: Not tested on animals

GMO Status: Non-GMO

Vegan Status: Does not contain animal-derived components

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