



# Gold of Pleasure Oil

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Embrace your nature

# Gold of Pleasure Oil



- Balanced amounts of omega-3, -6 and -9 fatty acids.
- High in gamma-tocopherol, the tocopherol with many additional health benefits
- Ticks many boxes on sustainability
- Beautiful skin feel
- Cosmos approved

Gold of Pleasure Oil is the remarkable name for the oil obtained from *Camelina sativa*. Although the oil is currently not well-known, it has been used for thousands of years. Even in the last century, gold of pleasure oil was used on a broad scale until the 1950s as edible oil, until other oils took over. Considering the beneficial composition, it is time to reappraise this beautiful oil.

## Fatty acid profile and its benefits

A striking feature of Gold of Pleasure Oil is its balanced ratio of omega-3, -6 and -9 fatty acids. Many consumers are aware of omega-3 and -6 in relation to food, and the fact that 3 'omega types' are present suggests a completeness. Omega-3 occupies roughly one-third of the fatty acid profile, which is more than 3 times as much as canola oil and almost 5 times as much as wheat germ oil. Omega-3 is recognised as essential for eye, brain and nervous system health. In typical western diets, the omega-3 / -6 balance is too low, which lead to an undesired inflammation status of the human body. The omega-3 fatty acid present in Gold of Pleasure Oil is alpha-linolenic acid (ALA). This fatty acid is known for anti-inflammatory actions in connection with many diseases. Already a small amount of a ALA-rich oil in a cosmetic product significantly improved symptoms of itching-related chronic diseases, such as browned skin patches, and improved

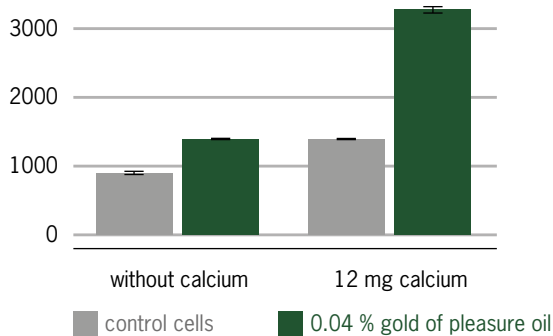
hydration, and reduced itching and abrasion. This is in line with other studies that show a reduction of itching after topical omega-3 application ascribed to the anti-inflammatory properties of omega-3 fatty acids.

Gold of Pleasure Oil contains uniquely high amounts of eicosenoic acid (C20:1), a fatty acid present in the human sebum, and linked to anti-inflammatory properties (Pereira *et al.* 2004).

## Minor compounds

Gamma-tocopherol, the high-efficacy antioxidant, is by far the predominant form of tocopherol naturally present in gold of pleasure oil, and is present in significant quantities. Alpha-tocopherol is well-known as vitamin E, but gamma-tocopherol is a much better antioxidant. More and more people realise that gamma-tocopherol offer health benefits not offered by alpha-tocopherol.

In summary, when compared to alpha-tocopherol, gamma-tocopherol has a higher antioxidant activity, uniquely high activity against reactive nitrogen species (RNS), unique anti-inflammatory actions, and plays a protective role when interacting with factors causing Alzheimer's disease, not shown by alpha-tocopherol. See detailed information in the section on gamma-tocopherol.



Keratinocytes differentiation marker involucrine (with reference to the stratum corneum) in HaCaT cells, 5 days incubation ( $P < 0.001$ ). Significant effects ( $P < 0.001$ ) are also seen with transglutaminase 1 (stratum spinosum), and cytokeratine 5/14 (stratum basale), without or with 12 mg calcium (arbitrary units).

## Scar healing and regenerative properties

The role of gold of pleasure oil in keratinocytes differentiation and turnover, and collagen synthesis is shown in tests on HaCaT keratinocytes and HS27 fibroblasts. Gold of pleasure oil stimulated the cytokeratine 5/14 expression, suggesting an epidermal restoration from the stratum basale, as well as transglutaminase-1 and involucrine, suggesting a deep renewal cycle of the epidermis. Gold of pleasure oil stimulated fibroblasts cell cycles, indicative for an accelerated turnover. Incubation of fibroblasts for 48 h with 0.08 % gold of pleasure oil yielded a 22 % increase in collagen synthesis. The test results suggest the regenerative and scar healing potential of gold of pleasure oil (Craciun *et al.* 2019).

## Sustainability – creating biodiversity

Sustainability is ensured from multiple angles.

**No rainforest destruction** – Gold of pleasure does not require tropical climates. On the contrary: it is growing on marginal, semi-arid drylands, with a low amount of rainfall, and with a high risk on desertification. Crop cultivation is a key element in reducing the desertification process. The need for deforestation is avoided.

**Increasing biodiversity** – The situation on biodiversity is the opposite of that of plants that grow on areas which were rainforests in the past, such as palm. Gold of pleasure grows

## Gamma-tocopherol preferred over alpha

In the past, the tocopherol focus was directed on alpha-tocopherol which neglected the beneficial role of gamma-tocopherol in the prevention of many diseases.

*In vitro* antioxidant testing clearly shows that high-gamma-tocopherols have a much higher antioxidant efficacy than alpha-tocopherol. Gamma-tocopherol is simply a more effective trap for lipophilic electrophiles, such as reactive nitrogen oxide species (such as peroxyxynitrite and nitrogen dioxide).

### Cosmetic interest

Gamma-tocopherol shows remarkable anti-inflammatory activities where alpha-tocopherol failed. Gamma-tocopherol inhibit the enzymatic activity of the inducible form of cyclooxygenase (COX-2) in macrophages and epithelial cells (Jiang *et al.* 2001). Gamma-tocopherol reduced PGE2 synthesis in IL-1beta-treated human epithelial cells, where alpha-tocopherol showed no effect (Jiang *et al.* 2000).

Gamma-tocopherol reduced PGE2 synthesis and leukotriene B4 formation at the inflammation site after carrageenan-induced inflammation in rats, *unlike alpha-tocopherol*. Gamma-tocopherol also decreased TNF-alpha and attenuates inflammation-mediated damage (Jiang *et al.* 2003).

In addition, gamma-tocopherol greatly inhibited melanin synthesis by 30–40 % in mouse B16 melanoma cells (alpha-tocopherol only a few percent), which is promising in the treatment of dark spots after sun exposure (Kamei *et al.* 2009). Gamma-tocopherol is a component of the skin sebum and is secreted by the sebaceous gland.

### Human body health effects

*Unlike alpha-tocopherol*, gamma-tocopherol reduced cyclophilin D and pro-caspase-3 expression, suggesting its unique role in Alzheimer's disease. Gamma-tocopherol reduces oxidative stress in the brain that was induced by reactive nitrogen species better than alpha-tocopherol.

Gamma-tocopherol protects against Alzheimer's disease in a way not shown by alpha. It also showed better neuroprotective effects than alpha in relation to Parkinson's disease, and it showed better performance in improving mitochondrial functions (Arrozi *et al.* 2020). Studies show that plasma concentrations of gamma-tocopherol are inversely associated with cardiovascular disease and prostate cancer.



on marginal land, and can be considered as an additional crop in fallow periods, hereby creating an opportunity for local wildlife, such as bees and insects to develop. (After all, fallow land does not present significant benefits to wildlife – from insects to deers). Gold of pleasure, based on insect counts, attracted wild bee species, honey bees, butterflies, beetles and hoverflies. In comparison to the studied other crops, gold of pleasure was more appreciated due to an optimal combination of desirable agronomic traits.

**Advantage for farmers** – The areas associated with gold of pleasure are typically socio-economically depressed areas, and having an additional crop is an advantage. Many typical European crops cannot be planted in the fallow period, so the gold of pleasure is a welcome additional crop. The harvesting is possible with usual machinery, avoiding the need for heavy investments in special machinery.




**Soil health** – The crop rotation scheme with gold of pleasure, in comparison to e.g. barlow monoculture, improves soil health and structure, nutrient cycling, and long-term yields.

**Low input crop** – Gold of pleasure has a low requirement for water, fertiliser and other agronomical aids, and is considered to be a relatively robust crop. The gold of pleasure oil production is done in a sustainable and environmental friendly way.

**Climate change ready** – Considering the circumstances gold of pleasure can grow in, it can be considered as a climate change ready crop.

**By-product use** – The (high protein) press cake can be used for feed, avoiding the need to import soybean meal. The gold of pleasure hay is left in the field to increase the soil's organic matter content and fertility.

**Sustainable Development Goals (SDG)** – This product contributes to the following SDGs:

	The product has additional health benefits. This is one of the SDGs referred to by ISO 16128.
	Obtained by mechanical pressing, not chemically modified. This is one of the SDGs referred to by ISO 16128.
	Gold of pleasure has a beneficial effect on biodiversity, soil health, does not require rainforest destruction and is a low input crop.

INCI / EU:	Camelina Sativa Seed Oil
CN:	亚麻荠 (CAMELINA SATIVA) 籽油
JP cosm:	アマナズナ種子油 (557164)
KR:	양구슬냉이씨오일
ISO 16128:	natural index: 1, natural origin index: 1
Cosmos:	Cosmos approved

### Skin feel

spreadability:	● ● ●
film forming:	● ● ●
stickiness:	● ● ●
silkyiness:	● ● ●
absorbency:	● ● ●