

**Anti-inflammatory actions**

Tsubaki oil has a long history in skin soothing. Recently, the mechanism of the anti-inflammatory activity of tsubaki oil has been investigated (Kim *et al* 2012). Tsubaki oil was found to inhibit LPS-induced production of NO, PGE2, and TNF-alpha (which play an important role in the inflammation process) in RAW264.7 cells. Expression of iNOS and COX-2 genes are reduced. This study has given more insight in the way tsubaki oil acts against inflammation. In an earlier study, a range of triterpene alcohols were identified in the unsaponifiable fraction of tsubaki oil, and tested successfully in its ability to inhibit TPA-induced ear inflammation (Akihisa *et al* 1997).

Its anti-inflammatory effect is an appreciated property of tsubaki oil when used in cosmetics. Because of its anti-inflammatory and emollient properties, Tsubaki Oil is a good option for e.g. after shave or after sun products.

**Chemopreventive properties**

The human body is constantly attacked by harmful substances. Any help from cosmetic ingredients which help in the defence against these substances is welcome. In the unsaponifiable fraction of tsubaki oil, triterpenoids are found (Akihisa *et al* 2004) that show an inhibitory effect on the TPA-induced Epstein-Barr virus early antigen (EBV-EA) induction, suggesting antitumor promoting effects.

**References**

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- Kim S. *et al* (2012): BMB Rep. 45(3), 177-82.



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# TSUBAKI OIL

The personal care secret from Japan

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Value through expertise



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In line with a historical usage of this personal care secret from Japan, tsubaki oil is suggested as a valuable ingredient in formulations to soothen the skin, fight skin ageing, moisturise the skin, promote collagen synthesis, retain skin elasticity, reduce wrinkles and fine lines, reduce inflammation disorders, and as hair care ingredient.

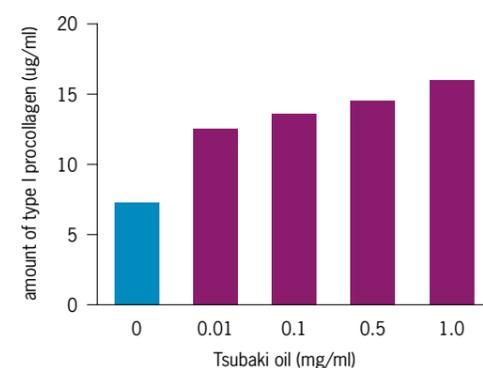
### Introduction

The *Theaceae* family contains many interesting species, historical embedded in ancient oriental cultures. *Camellia sinensis* is used for tea, and the seeds of the *Camellia oleifera* and *Camellia japonica* are well known for sources of edible oil. The oil with an impressive history in personal care, especially hair care, is derived from the *Camellia japonica*. This oil specifically is referred to as Tsubaki Oil, also called Tsubaki-abura. When the exact species name is not mentioned, names can lead to confusion. Tea-seed oil is for instance a common name for oil from the *oleifera* species.

### The plant

The tsubaki plant, which is native to Japan, is widely cultivated as an ornamental plant in Japan and China for many centuries, and introduced in Europe in the 18th century. It has beautiful flowers which can have different colours. The tree flowers in winter - early spring. The Japanese character for tsubaki is composed of the characters for 'tree' and 'spring'. The plant has a long and wide history in Japanese and Chinese traditional medicine against many

Figure 1 Increase of type I procollagen by Tsubaki oil.



remedies such as stomach disorders, and as a tonic and anti-inflammatory agent.

The oil is well-known for hair styling from the Edo period in Japan. The tsubaki blossom takes a central place in Japan at various festivals. Annually, tsubaki fans gather at the Tsubaki Shrine in Ehime prefecture for the Tsubaki Festival.

Science has elucidated the significance of bioactives, e.g. the saponins and triterpenes, towards their antimicrobial, antioxidant, anti-inflammatory, anti-allergic, anti-histaminic, gastroprotective and anti-melanogenesis potential.

### History

Tsubaki oil is the traditional personal care secret of Japan, and also currently used in personal care products in Japan. It is used to give geishas their beauty. It has a long history in East Asia in cosmetics and folk medicine for its skin and hair care benefits. It is used to nourish and soothen the skin and to keep the elasticity of the skin. Recently, scientific studies suggest the oil can improve many skin parameters, which substantiate the historical use.

### Oil composition

Tsubaki oil, pressed from the seeds, has a favourable fatty acid profile, with a very high level of oleic acid, an omega-9 monounsaturated fatty acid (MUFA), in a concentration of up to approx. 85 %. This contributes to its oxidative stability. Many other MUFA-rich oils share their healthy image, but many do not reach the high oleic acid concentration as present in Tsubaki oil. Furthermore, it contains palmitic acid (approx. 8 %), and low levels of stearic and linoleic acid (both approx. 3 %). The unsaponifiable fraction comprises also several bioactive compounds.

### Hair care

Tsubaki oil is in Japan especially known for its hair care properties. It is used to soften the hair, to make it more shinier, and to repair split ends. It is also used to protect the hair from external influences and from drying out.

secreted from the e.g. fibroblasts by TNF-alpha. Tsubaki oil has shown to inhibit significantly TNF-alpha-induced MMP-1 secretion in human dermal fibroblast cells, as shown in Figure 2, which suggests tsubaki oil can help to retain skin elasticity.

Figure 2 Inhibition of MMP-1 by Tsubaki oil.

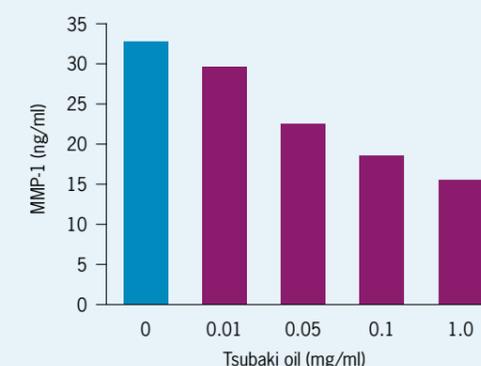
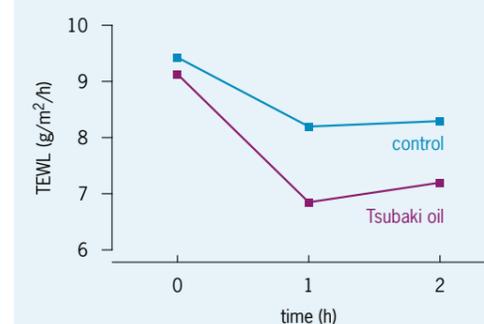


Figure 3 Effect on TEWL by 1 % Tsubaki oil.



Tsubaki oil can be applied in a pure form on the damp hair. A few drops, spread over the fingers, can be massaged into the damp hair.

### Studies on the efficacy of tsubaki oil

Many studies have been performed with tsubaki oil which show its remarkable properties (Jung et al 2007). Above, some examples are given.

### Influence on procollagen synthesis

When human dermal fibroblast cells were incubated with tsubaki oil, the production of type I procollagen is increased significantly in a dose dependent way, as shown in Figure 1. This is in line with other tests which show tsubaki oil activates human COL1A2 promoter activation dose-dependently using human dermal fibroblast cells.

### Retention of skin elasticity

A breakdown of dermal collagen fibres is a well-known sign of skin ageing. Matrix metalloproteinase 1 (MMP-1) degrade collagen type I, II and III, leading to a degradation of physical skin health. MMP-1 is

### Decrease of transepidermal water loss (TEWL)

In the fight against skin ageing, a well-moisturised skin is a prerequisite. A high transepidermal water loss (TEWL), caused by loss of skin barrier function, can cause an unhealthy, scaly skin. A test is performed with a lotion with 1 % Tsubaki oil, compared to the lotion only. Tsubaki oil significantly reduced the TEWL, as shown in Figure 3.

### Wrinkle reduction

The beneficial properties of tsubaki oil related to skin barrier function and its collagen-protection effects makes tsubaki oil as an ideal ingredient to fight wrinkles and fine lines, and to counteract skin ageing. Indeed, in literature, an anti-wrinkle effect is claimed of a formulation containing 2 % oil, using human volunteers.