

TEGO® Galanga

A natural extract obtained from the roots of *Kaempferia galanga*

- *Kaempferia galanga* is commonly used in South–East Asia for food (spice ingredient) and for traditional medicine (skin protectant).
- TEGO® Galanga is a natural source of ethyl p-methoxycinnamate with a minimum content of 98%.
- TEGO® Galanga provides excellent UV absorption and similar benefits in formulation as OMC.
- TEGO® Galanga is an ideal ingredient for the protection of hair fibres and hair colour fading against UV radiation.
- Usage level: 0.5 – 2.0%

Personal Care

INCI Name (CTFA name)

Kaempferia Galanga Root Extract

Chemical and physical properties (not part of specifications)

Form	Off-white to yellow powder
Active matter	min. 98% of ethyl p-methoxycinnamate

TEGO® Galanga is a natural extract obtained from the roots of *Kaempferia galanga* (also known as Lesser galangal) from the Zingiberaceae family, using a proprietary extraction process.

Kaempferia galanga is commonly used as spice ingredient and medicinal herb in South-East Asia. *Kaempferia galanga* is an herbaceous plant with fleshy rhizomes now widely cultivated in Malaysia and South East Asian countries. *Kaempferia galanga* is valued traditionally for its skin protection benefits (wound healing, removal of dandruff and scale from the head, anti-inflammation).

Kaempferia galanga rhizome contains about 2.5% to 4% essential oil. The ethyl ester of p-methoxycinnamic acid (figure 1) is the major constituent of the essential oil representing approximately 50%, followed by ethyl cinnamate (13-15%) and n-pentadecane (9-22%).

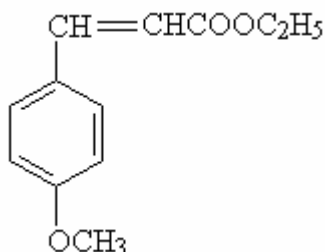


Figure 1: Chemical structure of ethyl p-methoxycinnamate

TEGO® Galanga is a natural source of ethyl p-methoxycinnamate, known for its UV filter properties and it contains a minimum of 98%. TEGO® Galanga has been evaluated for hair care applications.

Properties

• In vitro evaluation of UV absorption

The UV absorption properties of TEGO® Galanga were determined by recording a UV spectrum in comparison to the UV spectrum of Ethylhexyl methoxycinnamate (OMC), a standard UV filter.

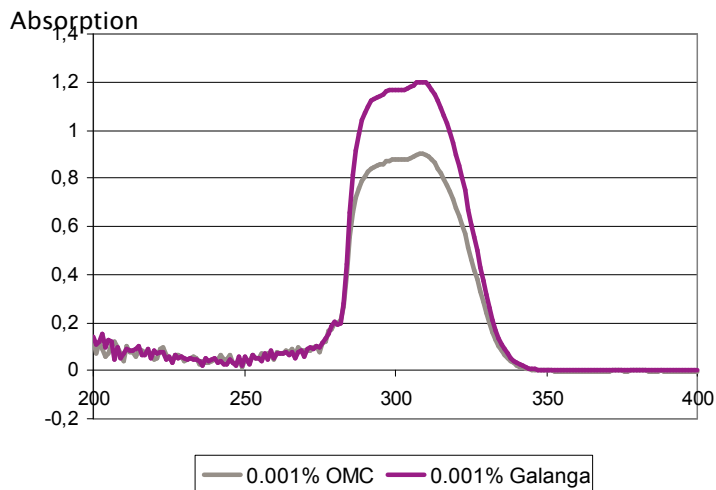


Figure 2: UV absorption of TEGO® Galanga in comparison to OMC

• In vitro evaluation of SPF

The in-vitro evaluation of the SPF was performed using a SPF-290S: the cosmetic emulsion is smeared on a PMMA plate (0.75g/cm²) and dried at 40°C. Then the plate is irradiated with UV light between 290 and 400 nm and the transmission through the plate is measured by a detector. The in-vitro SPF of the formulation is then calculated.

As test formulations O/W creams were used which contain 1 and 2% of TEGO® Galanga and OMC respectively. Figure 3 shows the in-vitro SPF of this formulation.

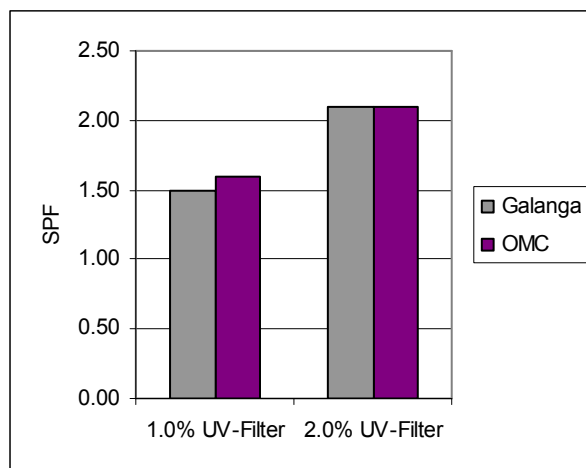


Figure 3: SPF of an O/W cream with TEGO® Galanga in comparison with OMC

The figure demonstrates clearly that TEGO® Galanga provides the same efficacy out of a leave-on formulation as the standard UV filter OMC.

- **Protection of hair fibres against damaged by UV radiation**

The tensile strength of single hair fibres were measured before and after irradiation with UV light. For this measurement hair fibres predamaged by bleaching were used. The measurements were carried out as described below:

Tensile strength of the hair fibres were measured before the fibres were treated with a simple leave in conditioner, an ethanolic solution containing 0.5 and 2.0% TEGO® Galanga. After the application of the leave in conditioner the hair fibres were dried overnight and irradiated for 7h with UV light. The treatment-radiation cycle was repeated four times. After the last irradiation the tensile strength was measured a second time.

From the tensile strength curve the parameter Load 15% (this is the load necessary to stretch the hair fibre to 15% of its original length) and the difference of this parameter before and after irradiation was calculated. The Load 15% is a very suitable parameter to characterize quantitatively the damage of hair by UV light.

The following graph shows the protection of the hair against UV damage compared to vehicle. The protection efficacy of the vehicle was said to be zero.

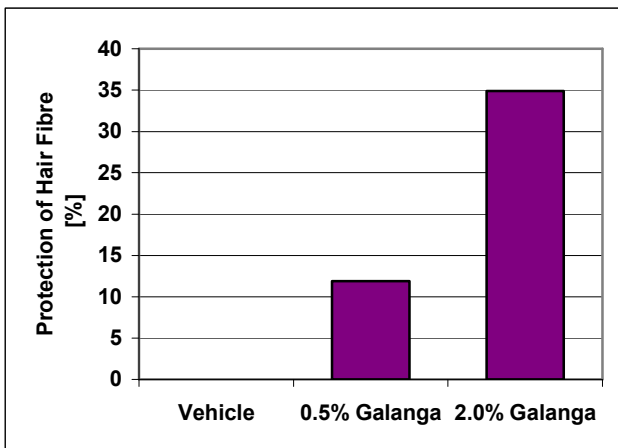


Figure 4: Tensile strength measurement of hair fibres damaged with UV radiation and treated with TEGO® Galanga

It can be seen very clearly that TEGO® Galanga protects hair very effectively against damage by UV light, even with a concentration of 0.5%. By increasing the concentration of TEGO® Galanga the protection is further increased.

- **Protection of coloured hair against fading**

The protection properties of TEGO® Galanga against fading of coloured hair tresses were evaluated and compared to a standard UV filter, Ethylhexyl methoxycinnamate (OMC).

Bleached hair tresses were coloured with a market product (colour: red). After the coloration the hair tresses were washed with a standard shampoo and a simple leave in conditioner, an ethanolic solution of TEGO® Galanga or OMC, was applied. The hair tresses were dried in a climatic chamber (12h, 22°C, 50% r.h.) and the colour of the hair tresses was measured according to the CIE-L*a*b* colour system. Afterwards the hair tresses were irradiated for 7h with UV light and the colour was measured again.

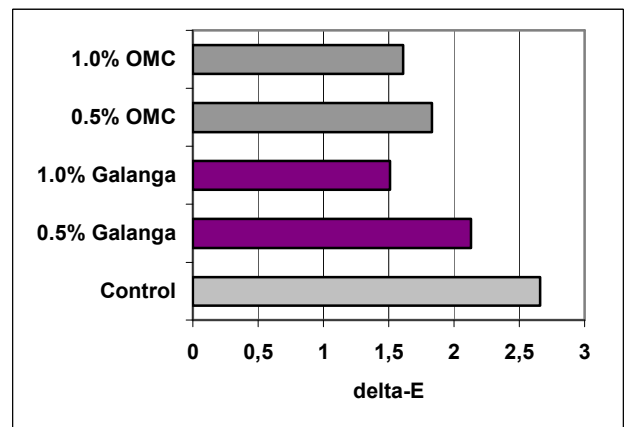


Figure 5: Colour Protection of hair fibres treated with TEGO® Galanga against UV radiation

With increasing concentration of TEGO® Galanga the colour fading decreases. TEGO® Galanga showed a comparable efficacy to Ethylhexyl methoxycinnamate.

Preparation

TEGO® Galanga is easily soluble in cosmetic oils. For the preparation of an emulsion it should be added to the oil phase. Afterwards the emulsion (O/W or W/O) can be prepared as usual. TEGO® Galanga might reduce the viscosity of an O/W emulsion. This can be adjusted by increasing the amount of consistency enhancers like TEGO® Alkanol 1618, TEGO® Alkanol 18 or TEGIN® M or by increasing the amount of hydrocolloids like TEGO® Carbomer or Xanthan Gum.

Recommended usage concentration

0.5 – 2.0% of TEGO® Galanga

Applications

TEGO® Galanga is suitable for hair care O/W and W/O formulations for:

- Hair repair and protection against UV radiations
- Colour protection of hair against UV radiations

Storage

1 year at room temperature.

Packaging

1 kg in aluminium laminate sachet.

Hazardous goods classification

Information concerning

- classification and labelling according to regulations for transport and for dangerous substances
- protective measures for storage and handling
- measures in accidents and fires
- toxicity and ecological effects

is given in our material safety data sheets.

Guide Line Formulations

Sprayable hairmilk with UV-protectant properties MM128/3	
Phase A	
Water	95.35%
Lactic acid	0.35%
Phase B	
TEGO® Amid S 18 (Stearamidopropyl Dimethylamine)	1.2%
Phase C	
TEGIN® G 1100 Pellets (Glycol Distearate)	0.6%
TEGO® Care PS (Methyl Glucose Sesquistearate)	1.2%
TEGOSOFT® DEC (Diethylhexyl Carbonate)	0.3%
TEGO® Galanga (Kaempferia Galanga Root Extract)	1.0%
Preservative, parfum	q.s.
Preparation:	
1. Heat phase A to approx. 75°C.	
2. Add phase A to phase B with stirring.	
3. Homogenise.	
4. Heat phase C to approx. 75°C and add phase C.	
5. Homogenize for a short time.	
6. Cool with gentle stirring to below 40°C.	

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