

ANTI-WRINKLES, RETINOIC ACID-LIKE ACTIVITY



 **indena**<sup>®</sup>  
INDUSTRIA  
DERIVATI  
NATURALI

PERSONAL CARE

**SILIPHOS**<sup>®</sup>  
SILYBIN PHYTOSOME<sup>®</sup>

**PHYTOSOME**<sup>®</sup>  
MORE  
BIOAVAILABLE

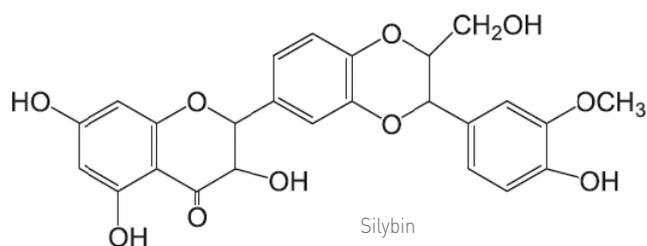


The ingredients described herein are offered for consideration for use in personal care products. The information provided describes historical use, ingredient activity and other information that may be relevant to their use in such products. How each ingredient would contribute to a particular product would be formulation specific. Furthermore please note that this documentation is available for various countries all over the world and hence it may contain statements not applicable to your country.

**SILIPHOS**<sup>®</sup> is the Phytosome<sup>®</sup> form of **Silybin**, the most active of the flavanolignans contained in milk thistle (*Silybum marianum*). Silybin is a **strong free radical scavenger**, also widely used as a dietary supplement, and has been shown to **prevent photoageing**.<sup>1</sup>

Silybin is a major flavanolignan obtained from milk thistle seeds. It has a polyphenolic structure which is normally poorly absorbed, but the bioavailability of silybin is optimized by the **Phytosome®** form.

As a Phytosome®, silybin is better absorbed and exerts its biological function efficiently.

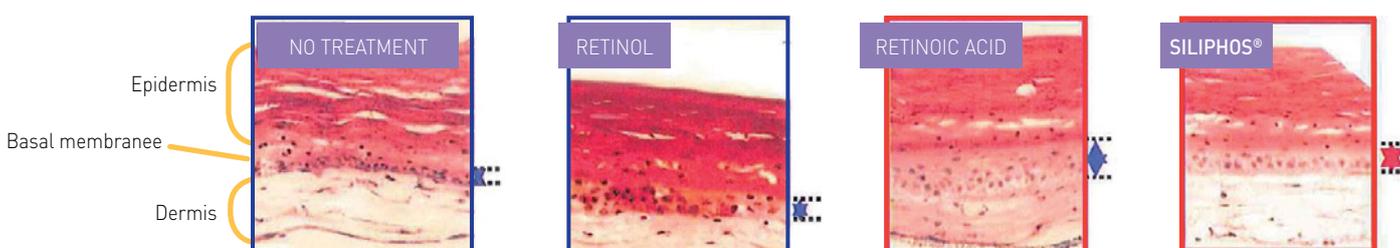


Former studies had demonstrated that the strong antioxidant properties of **SILIPHOS®** had increased the Minimal Erythral Dose (MED) by 24% in 18 healthy volunteers after 7 days' topical application.<sup>1</sup>

### EVALUATION DATA

New evidence studies have underlined the properties of **SILIPHOS®** in providing an activity similar to retinoic acid, but devoid of any irritation potential retinoic acid may cause.<sup>2</sup>

- Reduces the expression of keratinocytes terminal differentiation markers, thus providing a **visible antiageing effect**.<sup>2</sup>
- Reduces the expression of inflammatory response markers, modulating the Nf-KB (Nuclear Transcription Factor) expression, being **devoid of any irritation potential**.<sup>2</sup>
- Stimulates the basement membrane protein expression, as laminin-5 and integrin  $\beta$ 4, involved in the organization of the extracellular matrix, thus **improving the tissue compactness**.<sup>2</sup>
- In a 3D skin model, **SILIPHOS®** stimulates the basal membrane and derma, exerting an effective **skin ageing control**.<sup>3</sup>
- Most recent findings have also confirmed the **protective capacity of SILIPHOS® on UV induced damage**<sup>4</sup> (reduction of Caspase-3 cleavage on HaCaT cells).
- In the in vitro scratch test **SILIPHOS®** has shown the capacity to increase cells migration in a dose dependent manner.<sup>4</sup>
- The metalloproteinase activation, which physiologically induces cellular matrix components degradation, has also been shown to decrease after **SILIPHOS®** pre-incubation.<sup>4</sup>



### CHARACTERISTICS

**INCI NAME**

Lecithin (syn. Phosphatidylcholine), Silybin

**CAS**

Lecithin: 8002 - 43 - 5;  
Silybin: 22888 - 70 - 6

**EINECS**

Lecithin: 232 - 307 - 2;  
Silybin: 245 - 302 - 5

### APPLICATIONS

**SILIPHOS®** is a recommended active ingredient to counteract skin aging and photoaging. Its performances are similar to the widely used retinoic acid, but it has an **optimal tolerability profile** and does not induce irritation.

It fully qualifies for the formulation of **effective anti-ageing cosmetic products**.

**RECOMMENDED DOSAGE: 0.1 - 1%**



1. Singh RP et al, "Cosmeceuticals and silybinin", *Clinics in dermatology* (2009), 27, 479-484 - 2. Kitajima S et al, "Silybin from Silybum marianum seeds inhibits confluent-induced keratinocytes differentiation as effectively as retinoic acid without inducing inflammatory cytokines", *J. Clin Nutr.* (2009), 45, 178-184 - 3. Myiata S et al, "Effects of silybin (milk thistle extract) on the skin anti-ageing action", IFSCC Congress 2005 - 4. BEROS Internal Report, 26 June 2012.