

# MeiYanoL

*Ecoresponsible*

*extract*

*of elderberry flowers*

**Anti-dark circles**  
**Anti-eye bags**

**Anti-inflammation**  
**Anti-oxidation**  
**Iron chelation**

**EXSYMOL**  
MONACO

# MeiYanoL

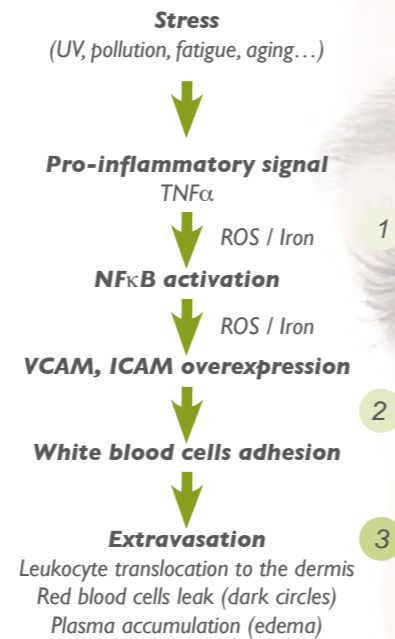
INCI name: SAMBUCUS NIGRA FLOWER EXTRACT

## Dark circles: Mechanism

The area around the eyes is extremely sensitive to environmental stress (UV, pollution, fatigue, aging...) as the skin is the thinnest of the body at this location.

The most visible symptoms to address for under-eye treatments are eye bags and dark circles, both of which are caused by a three-step inflammation reaction:

- 1 Stress (UV, pollution, aging, ...) triggers a signaling cascade with the upstream release of pro-inflammatory cytokines (chiefly TNF $\alpha$ ) that leads to the activation of NF $\kappa$ B. ROS, and especially iron-mediated ROS formation play a key role in this process.
- 2 NF $\kappa$ B is also responsible for the expression of cellular adhesion molecules (such as VCAM-1 and ICAM-1) in blood vessels. These proteins will bind the attracted leukocytes (white blood cells) at the inflammation area.
- 3 Bound leukocytes lead to endothelial barrier disruption that allows leukocytes to undertake the extravasation process: translocation from blood vessels to the dermis. This mechanism also causes a leakage of plasma and of a multitude of red blood cells in the surrounding tissue. The accumulation of plasma is responsible for eye bags (edema), and the red blood cells leak is responsible for the apparition of a dark red coloration : dark circles.



### 1 MeiYanoL ROS scavenging and iron-chelating properties limit inflammation

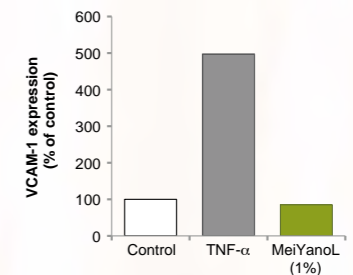
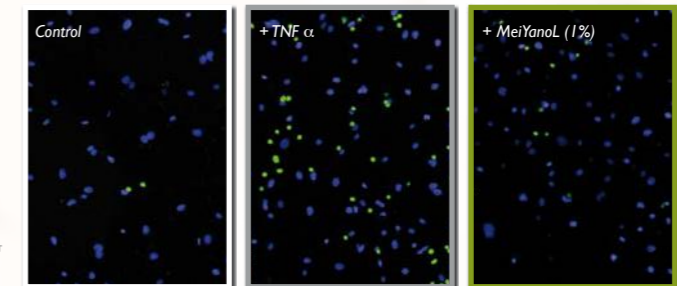
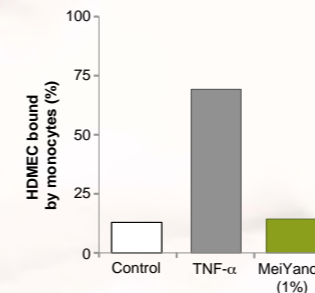
By scavenging ROS (high polyphenols content), and preventing their formation (iron chelation), **MeiYanoL** is interfering with the pro-inflammatory signalling mechanism.

	IC <sub>50</sub> (g/L)
Antioxidation DPPH	0.4
Iron chelation Ferrozine test	3.2

### 2 MeiYanoL prevents VCAM-mediated leukocyte attachment to blood vessels

**MeiYanoL** reduces TNF $\alpha$ -induced VCAM-1 overexpression in human dermal microvascular endothelial cells (HDMEC) (cf. right). This is mainly due to its iron chelating properties that have been described to reduce VCAM-1 expression.

As a result, because endothelial cells (blue nuclei) express fewer VCAM-1 proteins, fewer monocytes (a kind of leukocyte; green cells) are bound to endothelial cells, components of blood vessels (cf. below).



## Exsymol's solution: Sambucus nigra extract



The cell adhesion process prior leukocyte extravasation is well documented and is inhibited by several flavonoids.

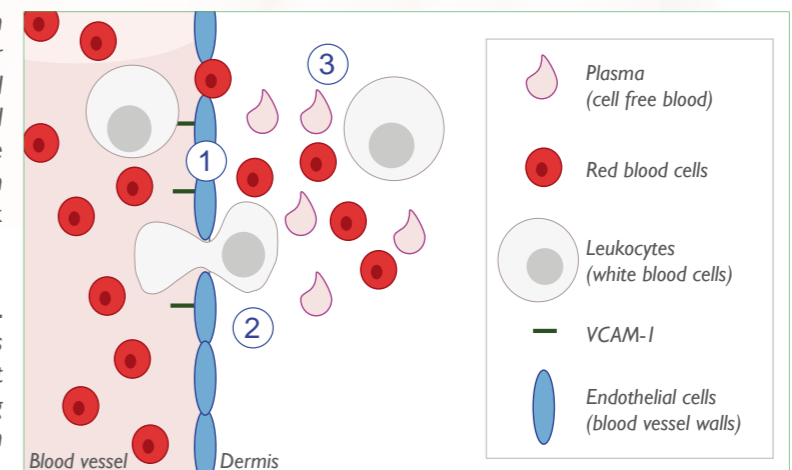
Developed in collaboration with perfumers from Grasse (France), **MeiYanoL** is an **ecoresponsible** extract of elderberry (*Sambucus nigra*) flowers which are rich in flavonoids and other polyphenols for strong anti-oxidant and anti-inflammatory properties.

Obtained by using extraction methods and biorefining techniques, **MeiYanoL** is capable of reducing both edema and dark circles around eyes.

### 3 MeiYanoL reduces both eye bags and dark circles

Because **MeiYanoL** reduces inflammation and therefore VCAM-1 expression, fewer leukocytes will be bound to endothelial cells. ① As a result, fewer monocytes will cross the blood vessel walls ② hence reducing both plasma accumulation (edema) and red blood cell leak (dark circles) ③.

This process ensures that **MeiYanoL** effectively prevents and reduces eye bags and dark circles. The anti-dark circle effect is further enhanced because of the chelating power that will reduce iron oxidation which is involved in coloration.



# MeiYanoL

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## COSMETIC APPLICATIONS



**Anti-dark circles**  
**Anti-eye bags**  
**Anti-inflammation**  
**Anti-oxidation**  
**Iron chelation**

## TECHNICAL CHARACTERISTICS

### ANALYTICAL COMPOSITION

Sambucus nigra .....	5%
Propanediol .....	50%
Water (sq) .....	100%

### PHYSICO-CHEMICAL CHARACTERISTICS

*Limpid, dark brown liquid, slightly odorous*  
*pH ≈ 4.5*  
*Density at 20°C ≈ 1*  
*Miscible with water, alcohol and glycols.*

### PRESERVATIVES

*No preservative*

### TOLERANCE AND TOXICITY STUDIES

**MeiYanoL** does not show any toxicity, and tolerance studies show that it is perfectly tolerated.

### FORMULATION

*Advised doses : 0.5% - 1.5%.*  
*No particular formulation restriction.*