

**OXIMMUNE™** is a powder extract obtained from the juice of Sicilian **blood oranges**. The three most common varieties are Moro, Tarocco and Sanguinello. The pigmentation of these oranges is the result of a protective mechanism to face the stressful climatic fluctuation between hot days and cold nights that occurs in Sicily's Etna area where they grow. Apart from being **rich in vitamin C**, blood oranges also offer **unique health benefits** associated with **high levels of anthocyanins which are red pigment antioxidants**.

**OXIMMUNE™** contains the principal polyphenols from the blood orange which are anthocyanins, hydroxycinnamic acids and flavanones as well as Vitamin C to bring a natural support to the immune system and help in preventing infections. Vitamin C deficiency includes symptoms like scurvy or painful joints.

COMPOSITION	% (W/W)	METHOD OF ANALYSIS
ANTHOCYANINS	0,3%-0,6%	UV
HYDROXYCINNAMIC ACIDS	0,4%-0,8%	HPLC
FLAVANONES	0,9%-1,7%	HPLC
ASCORBIC ACID (VITAMIN C)	>12%	HPLC

**SUGGESTED DOSAGE: 100-300 MG/DAY**



### *What is the immune system?*

The immune system is the body defense system made of several biological structures to protect against infections and diseases. In fact, when external agents like viruses or bacteria get into our organism, there is a mobilization of immunity cells and substances like antibodies to neutralize the enemy.

During aging, stress and some chronic condition, the immune system becomes weak leading to a major exposition to viruses or bacteria infection. A strategy could be the intake of food supplements able to stimulate or boost the immune system in order to help in preventing infections.

**OXIMMUNE™ HELPS TO PREVENT INFECTIONS BY PROVIDING  
A NATURAL SUPPORT TO THE IMMUNE SYSTEM  
AND REDUCES THE OXIDATIVE STRESS AND INFLAMMATION  
DURING INFECTION TO PROMOTE A FASTER RECOVERY**

## What are the benefits of Oximmune

Thanks to its unique composition, **OXIMMUNE™** helps to prevent infections by strengthening the body's defences and also improves the recovery from infection-related symptoms like fatigue and inflammation.



### SUPPORT OF A HEALTHY IMMUNE SYSTEM

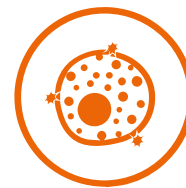
**OXIMMUNE™** is very rich in Vitamin C which is naturally present in the blood orange. The European food safety authority has approved a claim after the establishment of a cause and effect relationship between the dietary intake of vitamin C and contribution to the normal function of immune system<sup>1</sup>. The amount of vitamin C contained in **OXIMMUNE™** represents 15% of RDA which is enough to use the claim.

- Vitamin C contributes to immune defense by supporting various cellular functions of both the innate and adaptive immune system.
- Vitamin C supports epithelial barrier function against pathogens and promotes phagocytosis<sup>2</sup>.
- Vitamin C deficiency results in impaired immunity and higher susceptibility to infections<sup>2</sup>.

Flavonoids from orange juice have also demonstrated an immunostimulant activity. In fact, hesperidin is able to:

- Enhance lymphocytes and splenocytes proliferation which are the cells involved in the production of antibodies and white blood cells.
- Increase the activities of cells involved in the fight against viruses like NK cells and cytotoxic T lymphocytes<sup>3</sup>.

### PROVIDE ANTIOXIDANT PROTECTION



The polyphenols like anthocyanins in **OXIMMUNE™** have a potent antioxidant activity demonstrated in several clinical trials. In fact a red orange extract is able to decrease oxidative stress in subjects with compromised antioxidant defenses like smokers, diabetes patients, athletes, subjects exposed to air pollution and scuba divers. It neutralizes the free radicals and increases the glutathion level, an endogenous antioxidant. Improving the antioxidant defenses is helpful during infection as the process is related to an increase of free radicals, leading to fatigue. Moreover, the reduction of free radicals helps to prevent damages to the immune cells<sup>4</sup>.



### ANTINFLAMMATORY ACTIVITY

Inflammation is a process common during infections and responsible of several symptoms. In vitro studies conducted with red orange extract on a vitro model showed a significant inhibition of nitric oxide (NO), inducible nitric oxide synthase (iNOS) and cyclooxygenase-2 (COX-2) expressions<sup>5</sup>.

## References

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3 - **Sassi, A., Mokdad Bz ouich, I., Mustapha, N., Maatouk, M., Ghedira, K., & Chekir-Ghedira, L.** *Immunomodulatory potential of hesperetin and chrysin through the cellular and humoral response.* *European Journal of Pharmacology* 2017, 812, 91–96. doi:10.1016/j.ejphar.2017.07.017

4 - **Bonina F et al.** *Oxidative stress in handball player: effect of supplementation with a red orange extract.* *Nutr Res* 25: 917-924 (2005)

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