

Consumer leaflet

Please read this leaflet carefully because it provides important information. Immulina Plus Capsules is a dietary supplement, sold in pharmacies and health food stores without prescription. This product is not intended to diagnose, treat, cure, or prevent any disease.

Immulina[®] *plus*

Dietary Supplement
Capsules
Boost the Immune System

Composition:

Ingredient Name	Immulina <i>plus</i>		Immulina <i>plus forte</i>	
	Amount [mg] for 1 capsule, i.e.1 minimal daily dose:	Amount [mg] for 2 capsules, i.e. recommended daily dose:	Amount [mg] for 1 capsule:	Amount [mg] for 2 capsules, i.e. recommended daily dose:
LCEPEEN from Spirulina Extract	100	200	200	400
Baker's Yeast Extract <i>Saccharomyces cerevisiae</i>) providing 70% 1,3- β -D glucan	107,5 70	215 140	215 140	430 300
Acerola Fruit Extract (<i>Malpighia glabra</i>) providing 25% vitamin C	80 20 (25% DRV ²)	160 40 (50% DRV)	80 20 (25% DRV)	160 40 (50% DRV)
Zinc (as gluconate)	5 (50% DRV)	10 (100% DRV)	5 (50% DRV)	10 (100% DRV)

Accessory ingredients: Calcium biphosphate – stabilizer (E341), Magnesium salts of fatty acids – carrier (E470b), Cellulose microcrystalline – carrier (E460), Titanium dioxide – colour (E171), Gelatine – capsule shell.

Direction for use: One or two capsules daily while having meal or after meal. In case of common cold/flu season or low immune function the dose can be doubled temporarily. Do not exceed the recommended daily dose.

Properties and mode of action: Immulina Plus Capsules provides four active ingredients: LCEPEEN from Spirulina Extract, 1,3/1,6- β -D Glucan from Baker's Yeast Extract, Vitamin C from Acerola Extract and Zinc have beneficial effect on immune system. These active ingredients show synergistic effect³ working more effectively.

Spirulina Platensis Extract: provides the bioactive lipopolysaccharide complex, so called LECPEEN, obtained in a special, patented extraction process. This complex, when taken orally, does not absorb from GI tract and it is phagocytized by macrophages and dendritic cells, so called antigen-presenting cells⁴, causing their stimulation. The stimulated cells migrate to the lymphoid tissue of GI

¹ i.e. – latin: *id est* = that is

² DRV – dietary reference values for adults: vitamin C – 80 mg, zinc – 10 mg, according to the Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011.

³ Synergy - joint action of two or more agents (drugs) that, taken together, produce a greater effect than the sum of their individual effects.

⁴ Antigen-Presenting Cells - (APCs) are cells that display foreign antigen complexes to the immune system. There are three main types of antigen-presenting cell: dendritic, macrophages and B lymphocytes.

(so called GALT⁵) and stimulate the whole immune system. The lab tests and preclinical data indicate that it supports the innate immune system.

Baker's Yeast Extract (*Saccharomyces cerevisiae*) provides β -1,3/1,6-D-glucan is derived from the yeast-cell wall. The most active forms of β -glucans are those comprising D-glucose units with (1,3) links and with side-chains of D-glucose attached at the (1,6) position. These are referred to as β -1,3/1,6 glucan. After large molecule β -glucan is taken orally, it does not absorb from GI tract and it is phagocytized by macrophages and dendritic cells, so called antigen-presenting cells and through them activating the innate immune system.

Acerola Fruit Extract (*Malpighia glabra*), so called Barbados cherry, is known for being extremely rich in vitamin C, the second highest vitamin C content measured in fruits. One Acerola fruit weighing approx. 4.5 g has as much C vitamin as one kg of lemon fruits. One small glass (180 ml) of Acerola juice may contain as much C vitamin as 3.5 gallons of orange juice. It also contains substantial amount of vitamins A, B1, B2 and B3 as well as carotenoids, bioflavonoids and minerals (calcium, phosphorous, iron), which provide very important nutritive value and have antioxidant uses.

The C vitamin in Acerola fruit comes in a bio-flavonoid complex (together with rutin and hesperidin), which is better absorbed by human organisms than synthetic ascorbic acid. Vitamin C in this complex is also more stable and continuously released that enhances its bioavailability. Moreover, rutin and hesperidin have some beneficial effects. Vitamin C plays many functions in the body i. a. enhances immune system, increases resistance to infection, counteract tiredness and fatigue.

Zinc (as zinc gluconate) – is an essential element that plays important role in numerous functions of human body. Zinc is also known to play a central role in the immune system, and zinc-deficient persons experience increased susceptibility to a variety of pathogens. Zinc is crucial for immune health particularly in children.

Additional remarks: Do not use if you are allergic to any ingredient. Do not use after expiry date or if the blister with capsules is broken. Pregnant or nursing women should consult your health care professional before use. A dietary supplement cannot be used as a substitute for a varied diet. The product should be stored out of the sight and reach of young children at room.

Available packages: boxes containing 30 or 60 regular capsules or box containing 30 forte capsules.

Manufactured by Phytomedica Poland, in European Union, phone: +48 550 60 30,
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Immulina® is registered trade mark

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⁵ GALT - gut-associated lymphoid tissue and works to protect the body from invasion. The digestive tract is an important component of the body's immune system. In fact, the intestine possesses the largest mass of lymphoid tissue in the human body. The GALT is made up of several types of lymphoid tissue that store immune cells, such as T and B lymphocytes, that carry out attacks and defend against pathogens.

References:

1. Balachandran P, Pugh N. et al. Toll-like receptor 2-dependent activation of monocytes by Spirulina polysaccharide and its immune enhancing action in mice; *Int. Immunopharm.* 6 (2006) 1808-1814.
2. Pugh N, Ross SA, et al. Isolation of Three High Molecular Weight Polysaccharide Preparations with Potent Immunostimulatory Activity from *Spirulina platensis*, *Aphanizomenon flos-aquae* and *Chlorella pyrenoidosa*; *Planta Med* 67 (2001) 737-742.
3. Pugh N, Pasco DS.; *Immulina Polysaccharide a Potent Activator of Monocytes*; (2001) Univ. Mississippi Protoc.,
4. Lydeking-Olsen E, Lydeking-Olsen H, et al. *Immulina in autoimmune diseases*; Institute for Optimum Nutrition, Denmark, RMG Biosciences, Inc., United States,
5. Chamorro G, Salazar M, et al. Pharmacology and toxicology of *Spirulina* alga; *Rev Invest Clin* (1996) 48:389-399,
6. Krishnakumari MK, Ramesh HP, et al. Food safety evaluation: Acute oral and dermal effects of the algae, *Scenedesmus acutus* and *Spirulina platensis*, on albino rats. *J Food Prot* 44:934-935.
7. Leung AY, Foster S. *Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics*. 2nd ed. Wiley and Sons; 1996.
8. Miura NN, Ohno N. et al. Blood clearance of (1->3)- β -D-glucan in MRL lpr/lpr mice. *FEMS immunology and medical microbiology* 1996;13: 51-57.
9. Vetvicka V, Dvorak B, et al. Orally administered marine (1->3)- β -D-glucan Phycarine stimulates both humoral and cellular immunity. *Int J of biol. macromolecules*; 2007;4: 291-298.
10. Babineau TJ, Marcello P, et al. Randomized phase I/II trial of a macrophage-specific immunomodulator (PGG-glucan) in high-risk surgical patients. *Ann Surg.* 1994;220:601-609.
11. Dellinger, EP; Babineau TJ, et al. Effect of PGG-glucan on the rate of serious postoperative infection or death observed after high-risk gastrointestinal operations. *Betafectin Gastrointestinal Study Group. Arch Surgery* (Chicago, Ill. 1999;134: 977-983.
12. Vetvicka, V; Terayama K, et al. Pilot Study: Orally-Administered Yeast β 1,3-glucan Prophylactically Protects Against Anthrax Infection and Cancer in Mice. *J. American Nutraceutical Association* 2002; 5 (2): 5-9.
13. Onderdonk, AB; Cisneros RL et al. Anti-infective effect of poly-beta 1-6-glucotriosyl-beta 1-3-glucopyranose glucan in vivo. *Infection and Immunity* 60 (4): 1642-1647.
14. Kernodle, DS; Gates H, et al. Prophylactic Anti-Infective Activity of Poly-1-6- β -d-Glucopyranosyl-1-3- β -d-Glucopyranose Glucan in a Guinea Pig Model of Staphylococcal Wound Infection. *Antimicrobial Agents and Chemotherapy* 1998;3:545-549.
15. Tzianabos, AO; Gibson FC, et al. Protection against experimental intraabdominal sepsis by two polysaccharide immunomodulators. *J of Infectious Diseases* 1998;1:200-206.
16. Sener, G; Toklu H, et al. Protective effect of beta-glucan against oxidative organ injury in a rat model of sepsis. *International Immunopharmacology* 2005;9:1387-1396.
17. Browder, W; Williams D, et al. Beneficial effect of enhanced macrophage function in the trauma patient. *Annals of Surgery* 1990;211,5:605-613.
18. Leme J, Fonseca H, et al. Variation of ascorbic acid and beta-carotene content in lyophilized cherry from the West Indies (*Malpighia punicifolia* L.) *Arch Latinoam Nutr.* 1973;23:207-215.
19. Visentainer JV, Vieira OA, et al. Vitamin C in Barbados cherry *Malpighia glabra* L. pulp submitted to processing and to different forms of storage. *Arch Latinoam Nutr.* 1998;48:256-259.
20. de Medeiros R. Proportion of ascorbic, dehydroascorbic and diketogulonic acids in green or ripe acerola (*Malpighia punicifolia*) *Rev Bras Med.* 1969;26:398-400.
21. Visentainer JV, Vieira OA, et al. Physico-chemical characterization of acerola (*Malpighia glabra* L.) produced in Maringa, Parana State, Brazil. *Arch Latinoam Nutr.* 1997;47:70-72.
22. Hwang J, Hodis HN, et al. A Soy and alfalfa phytoestrogen extracts become potent low-density lipoprotein antioxidants in the presence of acerola cherry extract. *J Agric Food Chem.* 2001;49:308-314.
23. Caceres A, Lopez B, et al. Plants used in Guatemala for the treatment of dermatophytic infections. 2. Evaluation of antifungal activity of seven American plants. *J Ethnopharm.* 1993;40:207-213.