



WEISHARDT, a relevant player in immune health

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In 2019, the immune health supplements market size was USD16.32 billion. It is now projected to reach USD29.40 billion by 2027, with a CAGR of 7.4% during the forecast period (source: Fortune Business Insights). COVID-19 pandemic sparked the demand for immune health supplements across the globe. This growth is attributable to the rising reconsideration of health and well-being by the masses.

Inflammation and immunity

Considering the immune health, inflammation is a vital part of the immune system's response

to infection from bacteria, viruses.., toxic compounds, or irradiation¹ and acts by removing injurious stimuli and initiating the healing process². Inflammation is therefore a defense mechanism that is essential to the immune health³. Usually, during acute inflammatory responses, cellular and molecular events and interactions efficiently minimize impending injury or infection. This process contributes to restoration of tissue homeostasis and resolution of the acute inflammation. However, uncontrolled acute inflammation may become chronic and deleterious for the organism⁴.

In terms of pathways, these inflammatory

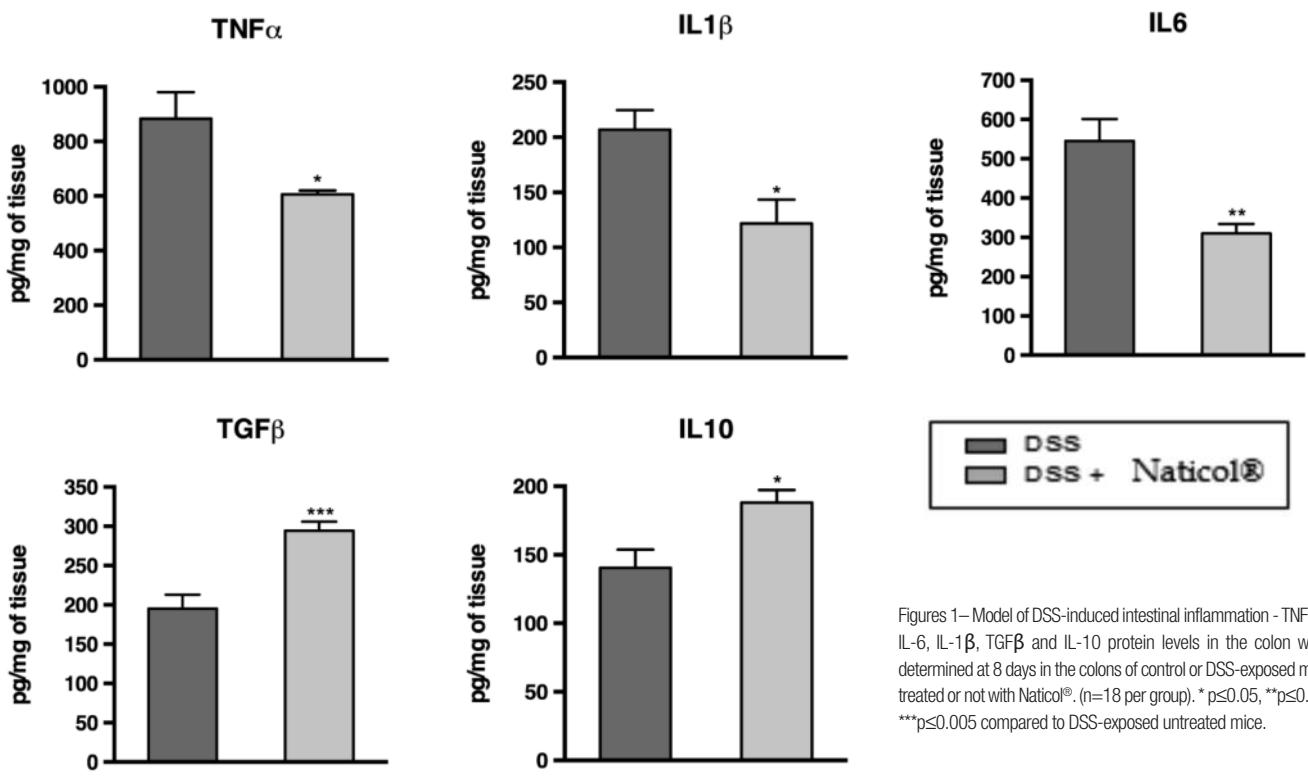
stimuli activate intracellular signaling pathways that activate production of inflammatory mediators such as cytokines⁵. The table below summarizes the cytokines and their functions (pro or anti-inflammatory).

Scientific studies show that Naticol® downregulates pro-inflammatory cytokines (TNF-α, IL-1β, IL-6) and increases anti-inflammatory cytokines (TGF-β, IL-10).

Naticol®, natural fish collagen peptides developed from Weishardt innovative collagen science, has preclinically demonstrated its ability

Cytokine	Family	Main sources	Function
IL-1β	IL-1	Macrophages, monocytes	Pro-inflammation, proliferation, apoptosis, differentiation
IL-4	IL-4	Th-cells	Anti-inflammation, T-cell and B-cell proliferation, B-cell differentiation
IL-6	IL-6	Macrophages, T-cells, adipocyte	Pro-inflammation, differentiation, cytokine production
IL-8	CXC	Macrophages, epithelial cells, endothelial cells	Pro-inflammation, chemotaxis, angiogenesis
IL-10	IL-10	Monocytes, T-cells, B-cells	Anti-inflammation, inhibition of the pro-inflammatory cytokines
IL-12	IL-12	Dendritic cells, macrophages, neutrophils	Pro-inflammation, cell differentiation, activates NK cell
IL-11	IL-6	Fibroblasts, neurons, epithelial cells	Anti-inflammation, differentiation, induces acute phase protein
TNF-α	TNF	Macrophages, NK cells, CD4 ⁺ lymphocytes, adipocyte	Pro-inflammation, cytokine production, cell proliferation, apoptosis, anti-infection
IFN-γ	INF	T-cells, NK cells, NKT cells	Pro-inflammation, innate, adaptive immunity anti-viral
GM-CSF	IL-4	T-cells, macrophages, fibroblasts	Pro-inflammation, macrophage activation, increase neutrophil and monocyte function
TGF-β	TGF	Macrophages, T cells	Anti-inflammation, inhibition of pro-inflammatory cytokine production

Table 1 – Summary of cytokines and their functions



Figures 1–Model of DSS-induced intestinal inflammation - TNF- α , IL-6, IL-1 β , TGF β and IL-10 protein levels in the colon were determined at 8 days in the colons of control or DSS-exposed mice treated or not with Naticol®. (n=18 per group). * p≤0.05, **p≤0.01, ***p≤0.005 compared to DSS-exposed untreated mice.

to resolve inflammation - the innate reaction to preserve the immune system. Indeed, *in vivo* study results showed that a colonic inflammation in Naticol®-treated DSS mice was associated with lower levels of TNF α , IL-1 β and IL-6 pro-inflammatory cytokines. The attenuated inflammation by Naticol® treatment was also supported by induced TGF β and IL-10 anti-inflammatory cytokines secretion.

"Naticol® Mix Immune"/ "Naticol® Mix Immune +", an innovative range of nutraceutical powder systems for immune Health

Due to the growing interest and demand of consumers for immune health solutions, Weishardt has developed a range of nutraceutical complexes under the name "Naticol® Mix Immune" and "Naticol® Mix Immune +". Formulated with Naticol® as the main active ingredient, these powder complexes contain vitamin C (100% RDA)

- which contributes to the protection of cell constituents from oxidative damage, reduction of tiredness and fatigue, normal function of the immune system (EFSA claims) - and/or minerals such as Copper (30% RDA) and Zinc (70% RDA) also contributing to the normal function of the immune health (EFSA claims). Providing established immunity solutions with vitamins and minerals but also innovative solutions with Naticol® which showed anti-inflammatory benefits in preclinical studies (see figure above), these stable nutraceutical complexes will help you make your entrance in the immune market segment.

Weishardt products are not intended to diagnose, treat, cure, or prevent any disease.

References

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