IMMUNE SUPPORT

Balanced Immune

PURERESPONSE® FORMULA; SUPPORTS HEALTHY CELLULAR IMMUNE RESPONSE AND CYTOKINE PRODUCTION‡

Balanced Immune is designed to **support immune balance and tissue integrity**, primarily by modulating the NFκB and NLRP and pathways that drive cytokine production. The formula targets cellular signaling and gene expression programs implicated in immunological homeostasis of connective and epithelial tissue.‡

- **Moderates the production of cytokines**
- **Maintains cellular protection against oxidative stress**
- **Supports tissue integrity**

WHO IS THIS SUPPLEMENT FOR?

- Patients seeking support for immunological indications involving connective tissue, thyroid or the GI tract
- Patients who fail to respond to standard curcumin as a single agent

MECHANISMS OF ACTION

Nuclear factor kappa B (NFκB) is a transcription factor that induces the expression of cytokines (IL-6, TNFα and pro-IL-1β), cyclooxygenase 2 (COX-2), matrix metalloproteinases (MMPs), and NOD-like receptor protein 3 (NLRP3). Preclinical data indicate that curcumin, resveratrol and quercetin modulate at least one step in this pathway (Figure 1).[1-3]

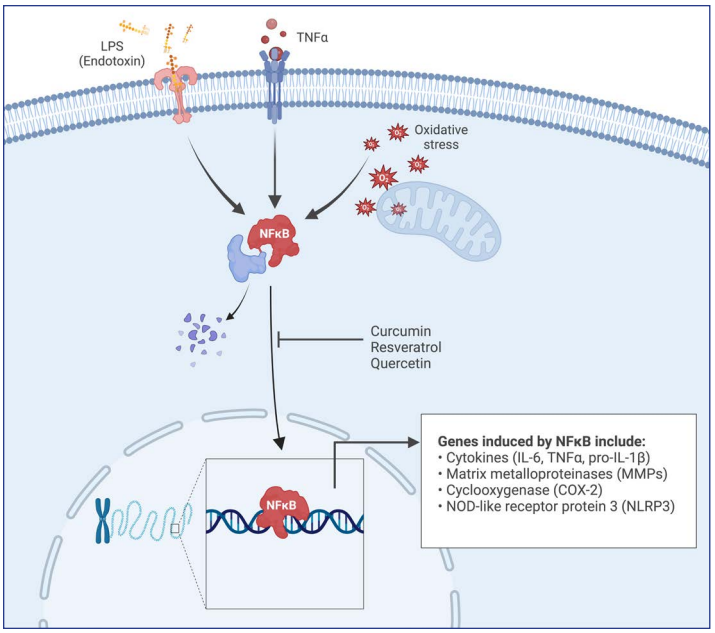
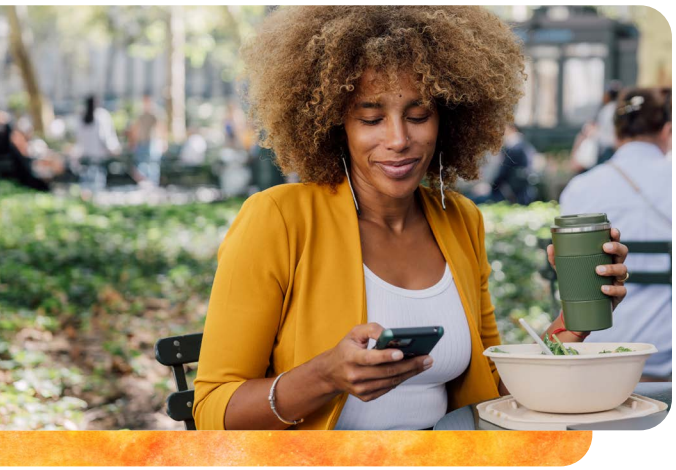


Figure 1. ***The NFκB pathway drives expression of cytokines and immune mediators.*** *Under basal circumstances, NFκB is inactive because it is sequestered in the cytosol by a protein complex. Immunological stressors, such as LPS (lipopolysaccharide, an endotoxin), TNFα, or oxidative stress, cause the complex to degrade, releasing NFκB and allowing it to travel to the nucleus. In the nucleus, it binds DNA and induces expression of a variety of genes encoding cytokines (IL-6, TNFα and pro-IL-1β), cyclooxygenase 2 (COX-2), matrix metalloproteinases (MMPs), and NLRP3. In preclinical models, curcumin, resveratrol and quercetin modulate at least one step in this pathway, reducing the ability of NFkB to reach the nucleus and activate gene transcription.*[1-3‡]



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NOD-like receptor protein 3 (NLRP3) is a cytosolic protein complex that stimulates the activation and secretion of interleukin (IL)-1ß and IL-18. Research suggests curcumin and vitamin D modulate this pathway.[4,5]

Nrf2 (Nuclear factor erythroid 2-related factor 2) is a transcription factor that promotes expression of genes involved in cellular detoxification and protection against oxidative stress. Sulforaphane and resveratrol support Nrf2 activation.[6,7] This pathway promotes expression of glutathione glutamylcysteinyl ligase, which is responsible for a critical step in the biosynthesis of glutathione, a vital endogenous antioxidant. Nrf2 also supports the expression of glutathione peroxidase, superoxide dismutase and phase II detoxification enzymes known as glutathione sulfotransferases (GSTs).[8-11]

Sirtuin 1 (SIRT1) is a deacetylase enzyme with extensively documented roles in maintaining metabolic health and mitochondrial function. Resveratrol and quercetin promote SIRT1 activation.[12,13] A methylated quercetin analog present in Kaempferia parviflora (black ginger) was reported to enhance SIRT1 activity more effectively than resveratrol in vitro.[14]

Enhanced curcumin bioavailability. This product contains a patented curcumin-phosphatidylcholine complex (Meriva® phytosome) for enhanced absorption and bioavailability. The proprietary phytosome technology combines curcumin and phosphatidylcholine at a 1:2 ratio, promoting resistance to degradation in the digestive tract and efficient absorption across the intestinal membranes (Figure 2).[15,16]

RESEARCH HIGHLIGHTS‡

A single-dose pharmacokinetic study in animals reported a 20-fold greater peak plasma curcumin level with Meriva® than with standard curcumin.[16] In humans, single-dose Meriva® produced 29-fold greater total peak plasma curcuminoid levels (as phase II conjugates) compared to an equivalent dose of standard curcumin.[15]

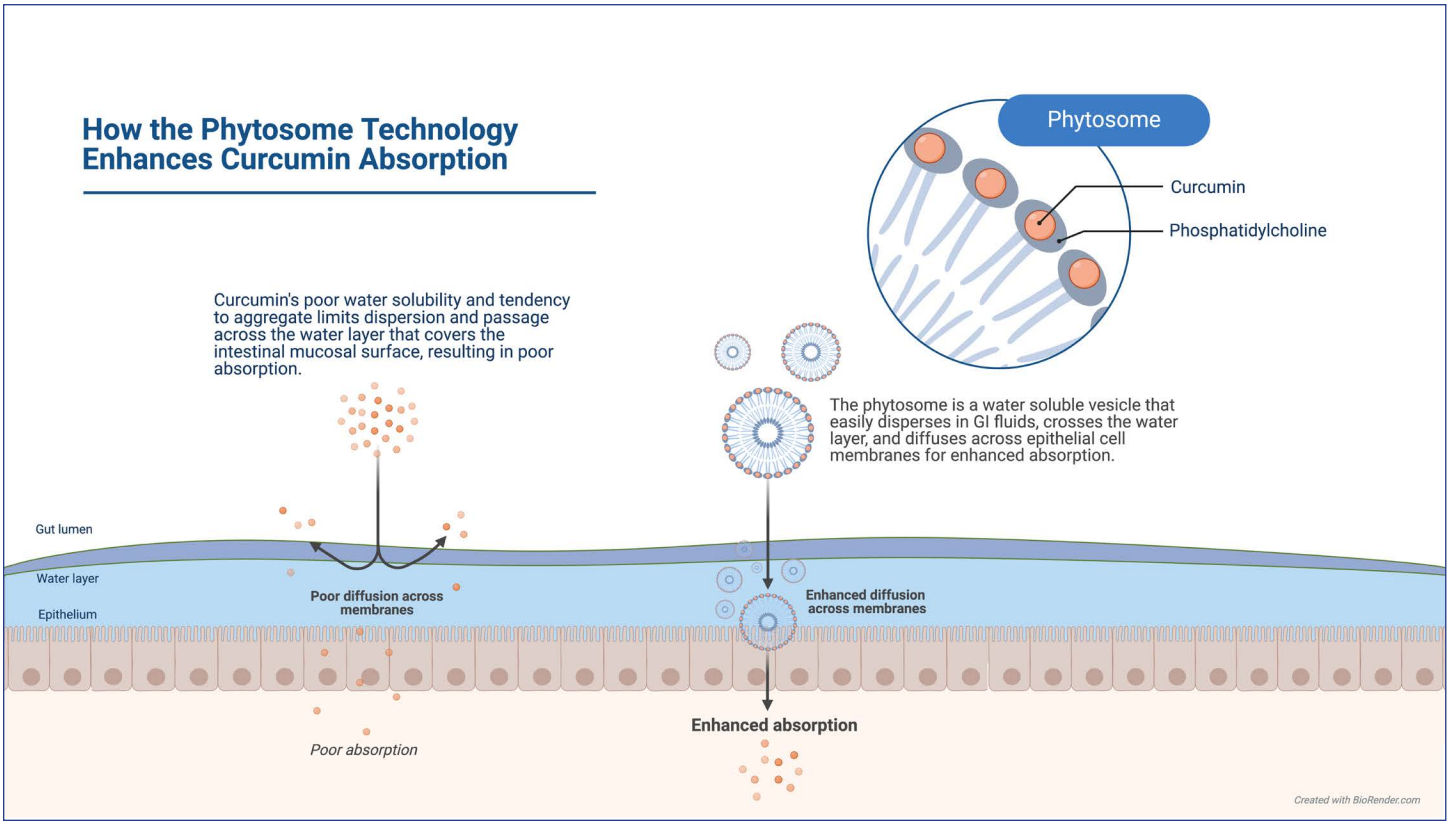


Figure 2. The Meriva® phytosome enhances curcumin bioavailability by enhanacing solubility and passive diffusion across intestinal cell membranes.

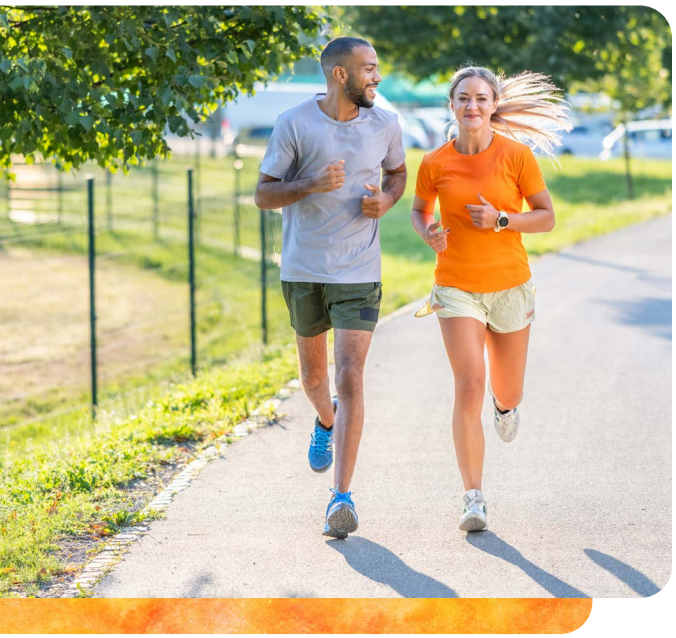
POTENTIAL INTERACTIONS

Curcumin may potentiate the glucose-lowering effects of metformin and glyburide.[17,18] Monitor for changes in glycemic control if you decide to proceed with this combination.

Curcumin may increase plasma levels of sulfasalazine.[19]

Quercetin may modify the metabolism and plasma levels of midazolam, cyclosporine, pravastatin and quetiapine.[20-24]

To check whether a medication may have clinically significant interactions with nutrients and ingredients based on doses commonly used in dietary supplements, visit our **Drug-Nutrient Interaction Checker**.



Supplement Facts

1 capsule, 1-2 times daily, with or between meals.

Each (size 00) vegetarian capsule contains:

Vitamin D (as cholecalciferol) (D_3)	25 mcg (1,000 IU)
Meriva® turmeric phytosome (*Curcuma longa* extract (root) and sunflower phospholipid complex) (standardized to contain 18% curcuminoids)	200 mg
Broccoli (*Brassica oleracea italica*) sprout concentrate (whole plant) (standardized to contain 600 mcg sulforaphane)	150 mg
Trans-resveratrol (from Japanese knotweed (*Polygonum cuspidatum*) extract (root))	100 mg
Sirtmax® black ginger (*Kaempferia parviflora*) extract (root)	50 mg
Quercetin	60 mg
Other ingredients: vegetarian capsule (cellulose, water), hypoallergenic plant fiber (cellulose)	

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Phytosome More Bioavailable is a trademark of Indena S.p.A.

Sirtmax® is a registered trademark of Tokiwa Phytochemical Co., Ltd.

Immune Support

Balanced Immune	Quantity	Order Code
	60	BIM6

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