

# **Glutamine & Theracurmin**

## **Background**

Maintenance of intestinal permeability has global effects throughout the body, with impact on the immune system, the cardiovascular system, the regulation of inflammatory mediators, as well as local intestinal functions. Supporting gut integrity may therefore have wide-ranging health benefits. Both glutamine and curcumin have been shown to inhibit oxidation and modulate other cellular processes that influence intestinal cell health and cellular tight junctions.

## **Glutamine in Intestinal Physiology**

Glutamine is the most abundant amino acid in the human body. It is a conditionally essential amino acid, meaning that it is required in increased amounts under certain conditions, e.g., of metabolic stress, to support healthy intestinal function. In many cell types, including enterocytes, glutamine acts as a primary fuel for mitochondria and is essential to the maintenance of mitochondrial membrane and optimal intestinal motility. Experimental studies suggest that glutamine supports a healthy inflammation response in colonic cells and is vital to basic intestinal cellular integrity and function. Under times of stress, the body's need for glutamine increases. Glutamine is a precursor to glutathione, the most important intracellular antioxidant.

Glutamine has been shown to support healthy enterocyte synthesis, proliferation, and integrity. It exerts influence over numerous signaling pathways governing healthy cell growth. Animal studies suggest that oral glutamine supplementation increases quantities of desirable mucosal proteins and ileocecal immunoglobulins and supports mucosal microvilli height, and controls passage of macromolecules, suggesting support of enterocyte and gap-junction integrity. Glutamine supports optimal structural integrity of the enterocytes and their barriers, controlling passage of lumina molecules into the systemic circulation, and maintaining healthy intestinal permeability.

## **Clinical Use of Glutamine**

Increased intestinal permeability occurs in many patient populations and glutamine supplementation has been shown to support healthy blood and tissue levels of glutamine and to optimize intestinal and digestive health function in diverse groups of patients. Glutamine supplementation has also been shown to support healthy intestinal permeability related to changes in liver function. It stimulates glucagon-like peptide, which plays a role in insulin release, and helps maintain optimal glucose metabolism.

## **Theracurmin**

Many studies have suggested beneficial effects of curcumin in supporting health of intestinal cells, particularly in the colon. Curcumin significantly improves survival and colonic morphology, dampens local cytokine and chemokine production, and reduces mucosal neutrophil infiltration.

However, to work optimally curcumin needs to act both systemically and locally. Standard curcumin is poorly absorbed and has limited water solubility. Theracurmin is a

novel turmeric preparation with dramatically enhanced absorption and bioavailability. Finely milled turmeric is made into a colloid with glycerin and a natural vegetable gum called gum ghatti, which mainly consists of polysaccharides obtained from the sap of ghatti trees (*Anogeissus latifolia*). Composed of all natural ingredients, Theracurmin is very stable against light and heat, has unmatched dispersion and stability in water, is 27 times more bioavailable in humans than standard curcumin, and many times more bioavailable than any other commercially available curcumin supplement. Theracurmin is over 27 times more bioavailable than standard curcumin. It complements the actions of glutamine by providing optimal support of the body's antioxidant and inflammatory pathways.

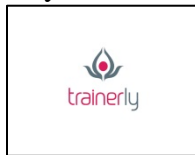
**In summary**, Glutamine & Theracurmin will:

- Restore gut barrier function
- Promote healthy intestinal permeability
- Support a healthy immune system function
- Support healthy tissue repair mechanisms

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