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Physiological Nutraceuticals: protective effects of Colostrononi on epithelium and microbiota

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Introduction:

The **Gastrointestinal tract** as a whole is one of the most specialised structures in the human body and it represents the largest area of contact between the body and the outside world (approximately 400 m^2). The **mucosal layer**, **gut microbiota**, **intercellular junctions and GALT** (Gut–Associated Lymphoid Tissue – the immune system associated with the mucosae) represent the four fundamental levels of the intestinal barrier. Moreover, the gastrointestinal tract is a PNEI (PsychoNeuroEndoCrinology)system that secretes neuropeptides, neurohormones, hormones and cytokines, thereby making a decisive contribution to the control of local and systemic physiological homeostasis and able to react to different types of stimuli.

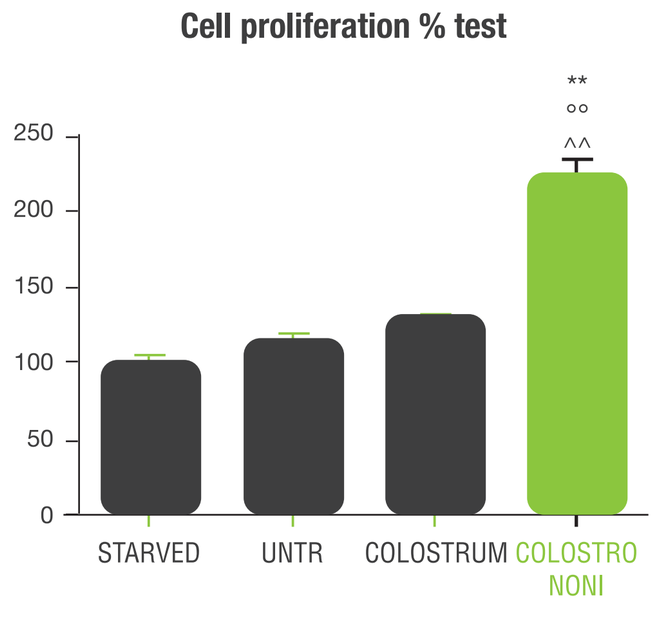
Aim of the study[1]:

Evaluate the effects of dietary supplement **Colostrononi** (Guna S.p.a. Italy) on the turnover of intestinal epithelial cells in vitro in a culture of Caco-2 cells, and the expression of Interleukin-8 (IL-8).

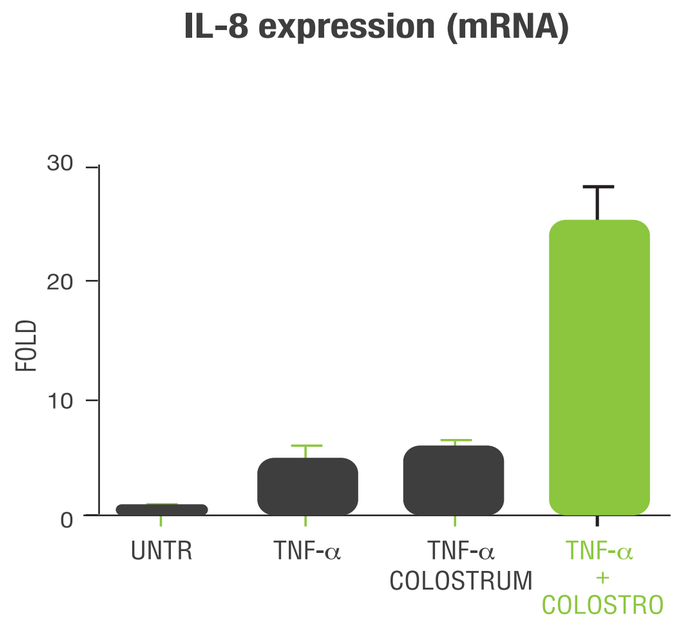
Methods:

The activity of **Colostrononi**, combination of bovine freeze-drying Colostro plus Noni (*Morinda citrifolia* L.) juice, at cell level was tested using an in vitro intestinal epithelium model based on the use of the Caco-2 cells line. The ability of **Colostrononi** to stimulate cell turnover by assaying the WST-1 cells growth rate was assessed. Real-Time-PCR was used to test **Colostrononi**'s ability to increase the gene expression of Interleukin-8 (IL-8), an important chemotactic factor involved in inflammatory phenomena and in the control of tissue homeostasis.

Results:



Analysis of the cell growth rate in the various experimental conditions.
Colostrononi's ability to stimulate cell turnover on Caco-2 cell cultures, a mechanism that is fundamental for epithelial damage repair, is clearly evident.



Graph showing IL-8 gene expression with the different treatments used. The use of Colostrononi increases the expression of IL-8 by maintaining levels (approximately 25-fold) well below those observed in cases of pathological inflammatory response (an approximately 300/600-fold increase) but high enough to maintain physiological immune response (Neutrophil recruitment).

Conclusions:

Colostrononi is able to stimulate the cell turnover in the in vitro model proposed and has been seen to actively increase the gene expression of IL-8. Both the aspects observed are fundamental for the establishment of tissue damage repair mechanisms.The results obtained suggest that **Colostrononi** can find a clinical application in the treatment of gastrointestinal conditions characterised by an impairment in correct intestinal permeability, in IBDs (Inflammatory Bowel Disease) in forms of dysentery, gastritis and in pathological alterations of the mucosal layer, such as celiac disease and gluten sensitivity.[1;2]

References:

[1] Cardani D. Colostro Noni administration effects on epithelial cells turn-over, inflammatory events and integrity of intestinal mucosa junctional systems. Minerva Gastroenterol Dietol. 2014 Mar;60(1):71-8. http://www.ncbi.nlm.nih.gov/pubmed/?term=colostro+noni
[2] Diego Cardani. New perspective in dietary supplementation: bovine colostrum and noni juice synergic protective effects on intestinal epithelium and microbiota. Inflamm Cell Signal 2014; 1: 254-261. doi: 10.14800/ics.237.