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WEISHARDT introduces its innovative powder complex Naticol® – Silicon (MonoMethylSilaneTriol)

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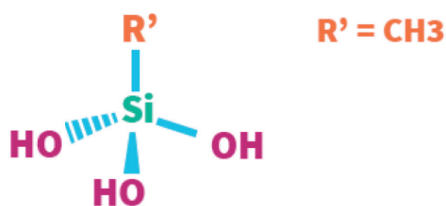
A relevant nutritional complex

Silicon (Si) is ubiquitous in nature and constitutes the third most abundant trace element in the human body (Jugdaohsingh et al, 2008; Reffitt et al. 1999). Its higher concentrations in the human body can be found in the skin, mucous membranes and connective tissues (Jurkic et al. 2013). Indeed, silicon plays a role in optimal connective tissue formation with involvement in the biosynthesis of collagen (Sripanyakorn et al. 2005; Barel et al. 2005). It also ensures the formation of cross-links between collagen and proteoglycans during bone growth. Additionally, there is evidence that the body silicon level decreases while aging and especially in postmenopausal stages for women (Bissé et al. 2005). Considering its concentration in the body, particularly in skin, this reduction of silicon (Si) throughout

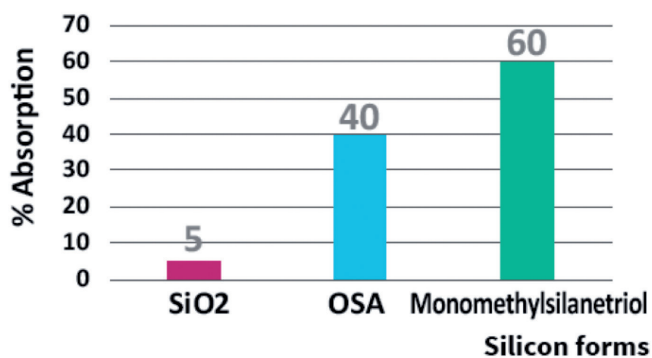
the years can be of sheer importance for dermatology. Scientific studies indicate that this silicon decrease can affect the synthesis of collagen, as well as the activation of dermal collagenase (Barel et al, 2005). Additionally, deprivation of silicon was also shown to affect the synthesis of glycosaminoglycans in bone and cartilage (Carlisle, 1972).

Although silicon benefits have been evidenced for decades, it also seems important to take into account its chemical form during oral administration. Indeed, chemical form of silicon determines its intestinal

MONOMETHYLSILANETRIOL FORMULA



SILICON ABSORPTION PERCENTAGE



Reference: Jugdaohsingh R. et al, (2009), Br J. Nutr. 102(6):825

absorption and bioavailability. Particulate and polymerized forms were shown to exhibit minimal oral bioavailability while organic compounds (monomethylsilanetriol) were reported to be highly absorbed (Jugdaohsingh et al. 2013; Sripanyakorn et al. 2009; Jugdaohsingh et al. 2000; Yokoi H & Enomoto S (1979)). Monomethylsilanetriol which contains unpolymerized forms (monomers and oligomers) is frequently found into a liquid form.

Consequently, referring to these data, particularly to silicon involvement in the collagen synthesis, it appears relevant to associate in a nutritional supplement (powder form) a source of collagen peptides (Naticol®) with a source of bioavailable silicon (monomethylsilanetriol).

Indeed, collagen, particularly Types 1 and 3 collagen, plays a role of support and provides structure to the skin and bones. In this area, Weishardt has already demonstrated benefits of its specific fish collagen peptides to modulate skin firmness and provide anti-inflammatory benefits.

Benefits scientifically demonstrated for WEISHARDT innovative powder complex Naticol® – Silicon (monomethylsilanetriol)

Weishardt can now offer in a powder form an innovative Silicon based complex combining specific fish collagen peptides and a selected bioavailable organic silicon (MonoMethylSilaneTriol).

This nutritional complex is chemically stable and water soluble. It has preclinically demonstrated anti-inflammatory properties (inflammation is a key factor in osteoarthritis, skin aging, inflammaging...) but also abilities to increase collagen production by decreasing the metalloproteinase function in the extracellular matrix rich in collagen and by increasing collagen synthase.

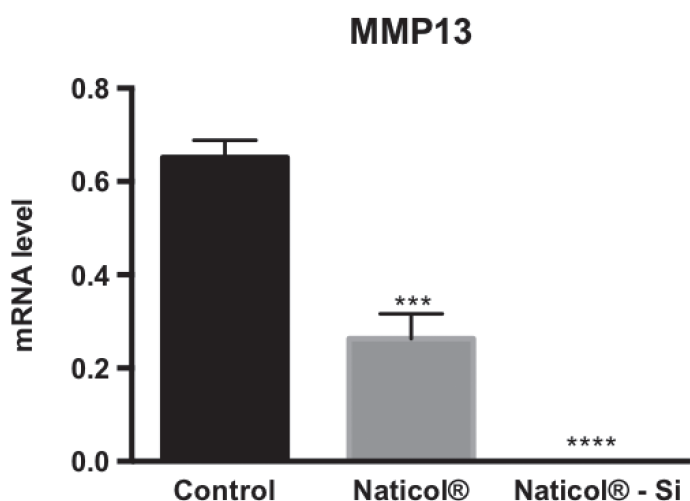


Fig. 1: Expression of MMP-13 (keratinocytes)

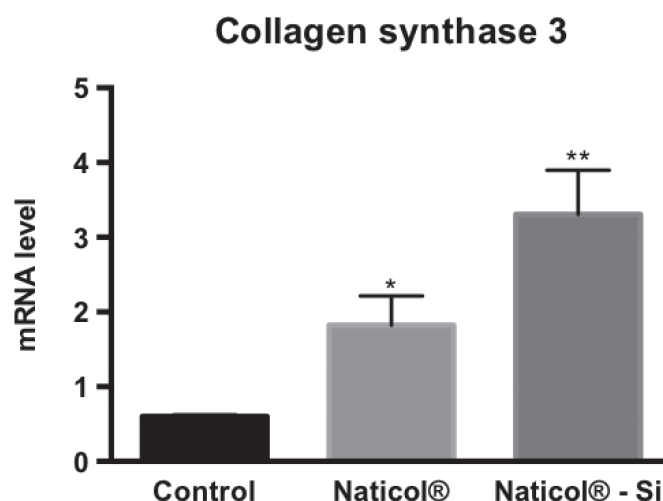


Fig. 2: Expression of collagen synthase 3 (keratinocytes)

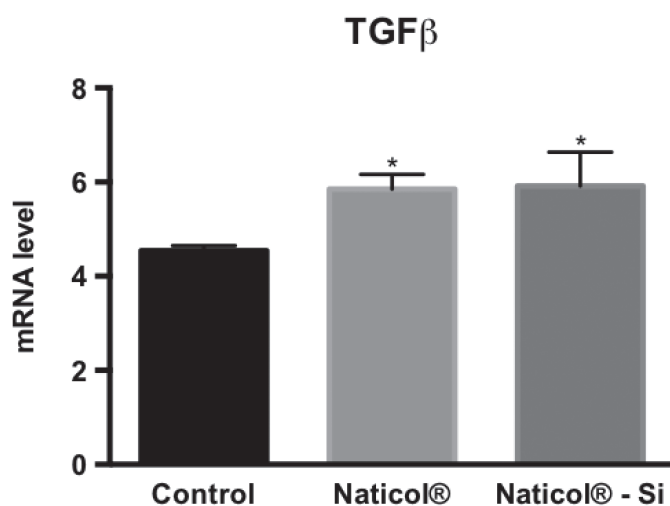


Fig. 3: expression of TGFβ (keratinocytes)

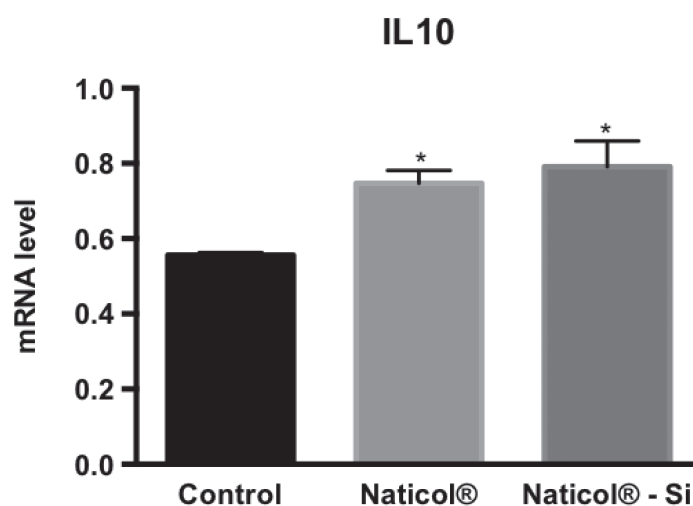


Fig. 4: expression of IL-10 (keratinocytes). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$

Figures 1–4 show the expression of collagen synthase 3 (enzyme involved in collagen production), metalloproteinase 13 (MMP13 involved in the breakdown of extracellular matrix containing collagen and tissue remodeling), TGFβ and IL-10 (proresolutive cytokines). In this experiment, human monocyte-derived macrophages (h-MDMs) and keratinocytes (HaCat) were co-cultivated in transwell culture system. The cells were stimulated with LPS to induce a pro-inflammatory phenotype and then were treated with Naticol® or Naticol®-Si.

To conclude, the innovative Silicon based complex combining specific fish collagen peptides and a selected bioavailable organic silicon (MonomethylsilaneTriol) is the perfect nutritional ingredient for nutraceuticals under liquid form.

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