

PRO-COL™

COLLAGEN

WHAT IS COLLAGEN?

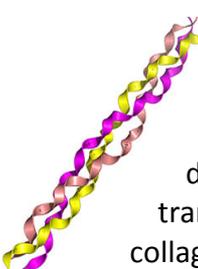
Collagen is a connective tissue protein. It is an essential component of the body that basically 'keeps it together' and it is used to build any new cellular structure, and helps repair connective tissue, tendons, cartilage and skin. Up to about 25 years of age, the body produces its own collagen. Beyond this, science has proven that the body produces less and less of its own collagen, and starts to 'lose' the collagen that it has.



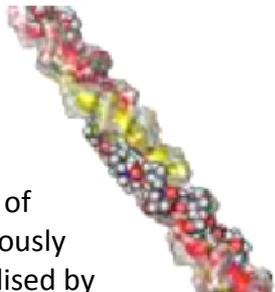
HOW THE BODY MAKES COLLAGEN:

The agents responsible for the production of Collagen are called Fibroblasts. Fibroblasts are the connective tissue cells that create and emit collagen fibres (as well as elastin and mucopolysaccharides for the skins bounce back capabilities and hydration) The external layers of the fibroblast cells are designed to receive and bring together specific catalyst molecules (referred to as fibroblast growth factors) which in turn cue the production of collagen. Initial emissions of fibres are known as procollagen where after they join together to form a total composition of molecules known as topocollagen.

THE STRUCTURE OF COLLAGEN:



Collagen has an unusual amino acid composition. It contains large amounts of glycine and proline, as well as two amino acids that are not inserted directly by ribosomes – hydroxyproline and hydroxylysine – the former composing a rather large percentage of the total amino acids. They are derivatised from proline and lysine in enzymatic processes of post translational modification, for which vitamin C is required. The white collagen that makes up the matrix of most connective tissue in mammals consists of inter-woven fibres of the protein collagen. The collagen fibres consist of globular units of the collagen sub-unit tropocollagen. Tropocollagen sub-units spontaneously arrange themselves under physiological conditions into staggered array structures stabilised by numerous hydrogen and covalent bonds. Tropocollagen sub-units are left-handed triple helices where each strand is, further, a right-handed helix itself. Thus, tropocollagen may be considered to be a coiled coil. Each chain is left handed helix and the wrapping is right-handed!



Another rare feature of collagen is its regular arrangement of amino acids in each of the alpha chains of the collagen sub-units. The sequence generally follows the pattern Gly-X-Y, where Gly for glycine, and X and Y for any amino acid residues. Most of the times, X is for proline and Y is for hydroxyproline. There are very few other proteins with such regularity. The inordinate number of Gly residues allows the otherwise sterically disallowed, tight coiling of each of the alpha chain subunits of tropocollagen, where there is a rise per turn of just 0.3 nm as opposed to the .36 nm of a regular Alpha helical coil. Hydroxylysine and hydroxyproline play important roles in the stabilisation of the tropocollagen globular structure as well as the final fibre shaped structure by forming covalent bonds. The resulting structure is called a collagen helix

References: www.3dchem.com/imagesofmolecules/Collagen2.jpg, www.3dchem.com/molecules.asp?ID=195

HOW CAN PROCOL™ COLLAGEN HELP?

HELP REJUVENATE AND REVITALIZE YOUR SKIN....

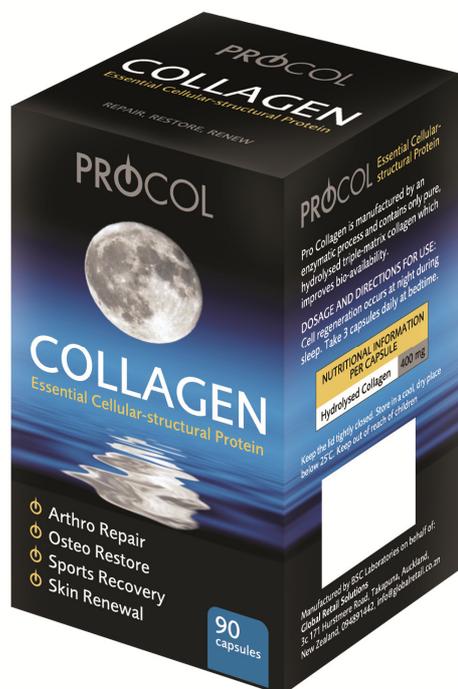
Collagen is the main structural component of your skin and as we age, our bodies naturally produce less. This results in visible aging of the skin. PROCOL™ Collagen brings you a pure, hydrolysed collagen supplement to:

- Rejuvenate and revitalize skin cells
- Help smooth wrinkles
- Help repair lost elasticity and provide firmness of the skin.

HELP REPAIR AND STRENGTHEN YOUR JOINTS....

With age our joints start to degenerate, losing strength, mobility and flexibility. Collagen is one of the most important building blocks of your bodies' cartilage and it is therefore necessary for the suppleness and health of the bodies' joints. PROCOL™ Collagen will help your body to:

- Reduce swelling and soothe discomfort of the joints
- Promote the regeneration of cartilage
- Boost fluid production in the joints, improving lubrication and mobility.



HOW CAN YOU HELP:

- Supplement the collagen in your body. Taken internally, your digestive system breaks the collagen down into its amino acids for improved absorption into the body.
- Protect your skin from further damage: Use sun block and a good moisturiser.
- Add Vitamin C to your daily diet. Vitamin C is necessary to help collagen work in the body.
- Supplement with Vitamin E. This vitamin works in tandem with Vitamin C in rebuilding the bodies collagen

and helps protect the skin cells against radical damage which increases the signs of aging.