



Review of BIOFAC Chicken Collagen Type II

With more than 70 years' experience in animal protein hydrolysis, BIOFAC is a preferable supplier of Chicken Collagen type II to quality and safety conscious customers worldwide



Typical application of Chicken Collagen type II is in capsules, tablets and soft gels.

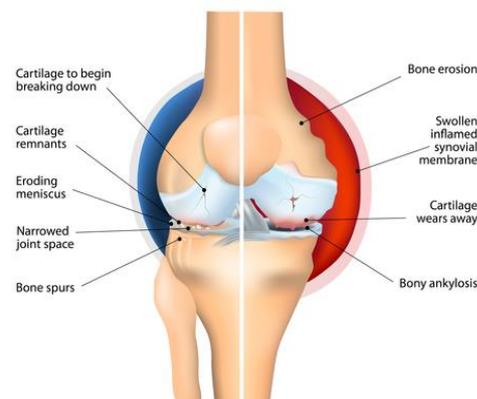
Oral administration for healthy joints and osteoarthritis treatment

Maintain healthy joints through life means avoiding arthritis. Joints are covered by cartilage that both lubricate joints and absorbs physical impacts, preserving ease of motion and comfort. Type II collagen is the most abundant collagen found in hyaline cartilage comprising 80 to 90 % of the total collagen content. It is a biomolecular, which is critical to reducing friction and keeping joints youthful. Various studies suggest that oral administration of collagen hydrolysates can improve the symptoms of osteoarthritis.

Clinical studies: 7 studies, whereas 3 of them were double-blinded are reviewed in: *Collagen hydrolysate for the treatment of osteoarthritis and other joint disorders: a review of literature.* A.E. Bello et al. Current Medical Research and Opinion Vol.22 No11, 2006, 2221-2232.

Role of Collagen Hydrolysate in Bone and Joint Disease.

Moskowitz, R.W. *Seminars in Arthritis and Rheumatism*, Vol 30, No 2 (October), 2000: pp87-99.



Osteoarthritis

Rheumatoid arthritis

breakdown of joint cartilage / rheumatoid arthritis is a long-lasting autoimmune disease.

Clinical Evidence for application in Rheumatoid Arthritis therapy

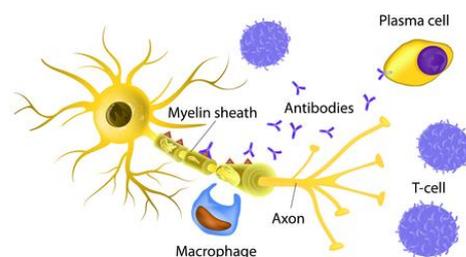
Whereas osteoarthritis is a wear and tear destruction of the cartilage, rheumatoid arthritis is an autoimmune disease. The chronic inflammation of rheumatoid arthritis results in progressive joint destruction, deformity, and loss of function. There are clinical evidence that the immune response in rheumatoid arthritis can be dampen down by so-called 'oral tolerance'. Oral tolerance is a state of systemic immune suppression to an antigen induced by oral feeding of the same antigen. The suppressor T-cells of the lymphoid tissue in the gut are activated by absorbed collagen II and thereby avoid a systemic immune response.

Clinical studies:

A Multicenter, Double-blind, Randomized, Controlled Phase III Clinical Trial of Chicken Type II Collagen in Rheumatoid Arthritis.

Wei, W., Zhang, L., XU, J. et al. *Arthritis Research & Therapy* (2009) 11: R180.

AUTOIMMUNE DISEASE



arising from an abnormal immune response of the body to substances normally present in the body.





BIOFAC Chicken Collagen Type II Specifications:

Description	Specifications	Methods
Appearance	Fine, homogeneous white to yellowish powder without smell	Visual and nasal
Fat	< 1 %	Petrol-Ether in Soxhlet
Chondroitin Sulfate	> 10 %	Carbazole
Hyaluronic Acid	Min. 3 %	Calculated, Carbazole
Collagen Type II	> 50 %	Hydroxypoline * 8
pH (10% solution)	5-7	EP/USP
Protein	> 70 %	Nitrogen * 6.25
Sulfated Ashes	< 10 %	EP/USP/JP
Solubility	100 % Soluble	2 % solution
Loss on drying	< 5 %	105°C for 4 h
Heavy Metals	< 10 ppm	JP
Total Bacterial Count	< 1000/gr	NMKL
E. Coli	Negative in 1 gr	NMKL
Salmonella	Negative in 25 gr	NMKL



BIOFAC Chicken Collagen type II is a fine white to yellowish powder with standardized properties. The standard grade with min 10 % Chondroitin Sulfate is a rich cocktail of naturally occurred collagen type II (min 50%), glycosaminoglycan s and hyaluronic acid (min 3%) Our flexible production line allows us to produce Chicken Collagen Type II with higher contents of Chondroitin Sulfate, as min 12%, min 20% or according to customer specifications.

BIOFAC Chicken Collagen should be stored in original and tightly closed containers or bottles at room temperature (not exceeding 25°C). Retest date is 2 years from date of production, if stored as advised above.

Manufactured by a special lenient enzymatic hydrolysis process that yields a high quality product with standardized properties. Tailored grades available.



To ensure highest quality and safety standards, we produce Chicken Collagen type II at our GMP certified factory located in Denmark. The raw material - chicken sternum cartilage - originates exclusively from veterinary controlled slaughterhouses, ensuring full traceability and compliance with highest veterinary and quality assurance standards.

Regulatory Compliance

- Manufactured at GMP plant under the strictest quality and environmental regulations.
- Food Approval by Ministry of Environment and Food of Denmark, Danish Veterinary and Food Administration
- All biological raw materials utilized at the factory have been veterinary controlled and fulfil EU requirements.
- Danish Environmental Protection Agency (Danish EPA) has made a categorization of BIOFAC as to an instruction No. 6 of 2004 on Differential Environmental Review and assessed that BIOFAC is classified as Category 1 (the best category) because of the high level of systematism and high level of regulatory compliance.
- Danish Working Environment Authority has assign BIOFAC with a green Smiley, indicating that BIOFAC has no issues with the Working Environment Authority, providing a high level of health and safety.

