

## WHY CONSUMERS LIKE HYDROLYZED FISH COLLAGEN

- *It's pure, hypo-allergenic protein*
- *Consumers can make their own health and beauty drink formulations*
- *It's easy to digest*
- *It has a neutral taste and odor*
- *It has Orthodox Union kosher certification*
- *It has Halal Food Council S.E.A. certification*
- *It is manufactured in a facility dedicated to marine products.*
- *It contains no additives, preservatives or sulfites*

### Nutritional Values of Hydrolyzed Fish Collagen

Average Nutritional Value based on 10 gram serving

Calories	45		
Moisture	0.6 grams	Sugar	0.0 grams
Total Fat	0.0 grams	Fiber	0.0 grams
Saturated Fat	0.0 grams	Protein	9.4 grams
Monounsaturated Fat	0.0 grams	Calcium	0.05 milligrams
Polyunsaturated Fat	0.0 grams	Iron	0.04 milligrams
Cholesterol	0.0 grams	Vitamin A	0.0 iu/gram
Sodium	20 milligrams	Vitamin C	0.0 milligrams
Total Carbohydrates	0.0 grams	Potassium	0.07 milligrams

*United States consumer laws require that products made with fish are labeled for fish allergen-sensitive consumers.*

At Kenney & Ross, each batch of HFC is tested by an independent, accredited laboratory using an Enzyme Linked Immunosorbent Assay (ELISA)<sup>®</sup> to measure the amount of allergen in the collagen. The allergen in fish is parvalbumin and is a water-soluble protein that is substantially removed during the washing process prior to extracting the HFC. Results of each assay are displayed on the COA.

For a comparison, many people are familiar with how serious peanut protein exposure is for peanut allergic consumers. The commercial ELISAs used to measure peanut protein have a sensitivity of 1 – 2.5 ppm. The ELISA we use to measure the fish allergen has a sensitivity of 0.02 ppm, which is 50 times more sensitive.

We believe our HFC is safe for all consumers. Even so, it is recommended that consumers allergic to fish should consult with their doctors prior to ingesting Hydrolyzed Fish Collagen.



# HYDROLYZED FISH COLLAGEN

*Kosher & Halal Certified*

Nutraceutical, Pharmaceutical, & Food  
Meets USP, EP, & JP Specifications



6493 Shore Road, Port Saxon, NS, Canada BOT 1W0  
p 902.637.2616 f 902.637.2511  
www.kenneyandrosslimited.com



# RESEARCH AND HEALTH BENEFITS\* OF HYDROLYZED COLLAGEN

## Healthy Hair, Skin & Nails

Hydrolyzed Fish Collagen contains greater amounts of the amino acids glycine and proline than many other proteins. These amino acids are necessary for promoting healthy tissue growth of hair, skin and nails. A recommended dose of 10 grams (2 tablespoons) a day in the diet is optimum. A 2006 study showed positive effects on the skin caused by an increase in collagen intake.<sup>7</sup>

## Protein Supplement

Since collagen is a pure protein, it has many applications as a protein supplement.<sup>8</sup> It can be added to the diet or supplement formulas to readily increase the protein in a meal or drink to provide optimal nutritional support.

## Osteoarthritis & Osteoporosis

Many studies have been performed to determine if collagen hydrolysates help in the treatment of osteoarthritis and osteoporosis. In a 2000 study, Roland W Moskowitz, MD concluded that "collagen hydrolysate is of interest as a therapeutic agent of potential utility in the treatment of osteoarthritis and osteoporosis. Its high level of safety makes it attractive as an agent for long-term use in these chronic disorders."<sup>4</sup> A 2006 study conducted by Alfonso E. Bello, MD concluded "a growing body of evidence provides a rationale for the use of collagen hydrolysate for patients with osteoarthritis."<sup>5</sup>

Laboratory tests indicate that the increased production of joint cartilage may be initiated by the ingestion of the hydrolyzed collagen while patient testing indicates that some of the peptide groups thought to be required to produce cartilage are absorbed by the blood.<sup>6</sup> It is not conclusive whether the cartilage growth is initiated by the presence of the hydrolyzed collagen or whether the hydrolyzed collagen provides the peptide chains for growth. It's possible that the increased production of joint cartilage is caused by one or both mechanisms.

## Easy to Digest

Our Hydrolyzed Fish Collagen has been treated with a non-GMO, food-grade enzyme to provide low molecular weight protein for easy digestion. The ease of digestion will appeal to consumers with digestive issues. It also helps provide a full feeling (satiety) for consumers who are trying to lose weight. Collagen contains seven of the eight essential amino acids. It lacks tryptophan, which can be obtained from many foods such as eggs, poultry, fish, milk or cheese.

1. Amino Acids, the building blocks of all proteins, are the oldest nutrients that have existed on earth. Amino acids perform various important functions for the body and serve as the materials for the body's cells, hormones, and enzymes. Proteins are made up of 20 kinds of amino acids. Of these 20 kinds, 9 must be taken from food since they are not synthesized in the body.

Therefore, they are called essential amino acids. It is necessary to compensate these essential amino acids from food in well-balanced, appropriate amounts. [www.ajinomoto.com/features/amino/lets/what/index.html](http://www.ajinomoto.com/features/amino/lets/what/index.html).

2. CAS registry numbers are unique numerical identifiers for chemical compounds. They are also referred to as CAS numbers or CAS RNs. The Chemical Abstract Service, a division of the American Chemical Society, assigns these identifiers to every chemical that has been described in the literature. About 20 million compounds have received a CAS number so far, with about 4,000 new ones being added each day.

The intention is to make database searches more convenient, as chemicals often have many names. Almost all molecule databases today allow searching by CAS number. <https://www.cas.org>.

3. A fish that is kosher must have scales and fins. Examples of kosher fish are cod, pollock and haddock. Examples of non-kosher fish are catfish, sharks, eels and rays. All skins used to produce our collagen are sourced from food

fish processing plants in Canada, the United States and Europe

4. Moskowitz R.W. (2000) Role of collagen hydrolysate in bone and joint disease, Seminars Arthritis Rheum, 2, 87-99

5. Bello A.E. (2006) Collagen hydrolysate for the treatment of osteoarthritis and other joint disorders: a review of the literature, Current Medical Research Opinions, 11, 2221-2232

6. Ohara H (2007) Comparison of quantity and structures of hydroxyproline-containing peptides in human blood after oral ingestion of gelatin hydrolysates from different sources, Journal of Agricultural and Food Chemistry, 55(4), 1532-1535

7. Hitoshi Matsumoto, et al., (2006) Clinical Effects of Fish Type I collagen hydrolysate on skin properties. ITE Letters on Batteries, New Technologies and Medicine, 7(4)

8. Castellanos VH, Litchford MD, Campbell WW, (2006) Modular Protein Supplements and Their Application for Long-Term Care, Nutrition in Clinical Practice, 21(5), 485-504

9. Bremer M. (2009) Selecting a Suitable Food Allergen Detection Method, Food Safety Magazine, 53, 16-19 [www.foodsafetymag-digital.com/](http://www.foodsafetymag-digital.com/)

\*The Food and Drug Administration has not evaluated these statements. This product is not intended to diagnose, treat, cure or prevent any disease.

# HYDROLYZED FISH COLLAGEN

Hydrolyzed Fish Collagen (HFC) is a pure protein made up of amino acids.<sup>1</sup> These amino acids are the basic structural group for all proteins. While all proteins are made up of amino acids, not all proteins are collagen.

Collagens from all sources are composed of the same amino acids and have the Chemical Abstract Service<sup>2</sup> number 68410-45-7 whether they come from fish, cattle or pigs. The difference between collagens arise in the percentage of each amino acid and the acceptance or confidence that consumers place in the source, manufacturing and purity.

*Hydrolyzed Fish Collagen (HFC) is manufactured from collagen, the principal protein found in all animal skin and bones.*

While animal collagen is typically extracted from cattle or pig skin, our fish collagen is produced from the skins of wild, deep-sea ocean fish such as cod, haddock and pollock.

Unlike farm-raised fish and other animals, wild-caught fish have no possibility of being exposed to antibiotics or hormones.

Consumption of protein is essential for all human beings and provides the nutrition needed for daily life. For diets stressing a reduction of red meat consumption, supplementation with HFC can help insure adequate protein intake. Our protein contains no cholesterol, sugar or fat, so it can be added to meals to provide a pure protein boost.

When collagen is hydrolyzed, the protein molecules are broken into smaller molecules. A hydrolyzed protein will be easier to digest and will be absorbed by the body faster and easier than a non-hydrolyzed protein.

In addition, only the skins of kosher fish<sup>3</sup> are used, so the HFC is able to meet the strict kosher standards of the Orthodox Union

[www.ou.org](http://www.ou.org)

These same skins and manufacturing conditions also meet the stringent Halal standards set by the Halal Food Council of South East Asia (S.E.A.). [halalfoodcouncil.info](http://halalfoodcouncil.info)

## How We Achieve Purity

Kenney & Ross, Ltd. manufactures HFC in Canada in a facility dedicated to marine products. At this facility, the skins from the wild, deep-sea fish are collected from food fish processors in Canada, the United States and Europe to provide quality raw material. Prior to extraction, the skins receive a thorough wash with copious amounts of water to clean the collagen and reduce any allergens to undetectable levels. It is only then that the collagen is ready to be hydrolyzed with a food-grade acid and then further

hydrolyzed with a food-grade enzyme to break down the collagen's molecular weights. No genetically modified materials are used in this product or in any of our fish gelatins or collagens. After filtering, purification and concentration, the HFC is sterilized and spray-dried to produce a final powder form. This HFC is pure protein and is very water soluble with no off odor or taste. It can be used as a concentrated protein or additive for nutraceutical, cosmetic or food applications and will exceed the purity requirements of the United States, European and Japanese pharmacopeias for gelatin.