Health Canada Santé Canada

NATURAL HEALTH PRODUCT

HYDROLYZED COLLAGEN

This monograph is intended to serve as a guide to industry for the preparation of Product Licence Applications and labels for natural health product market authorization. It is not intended to be a comprehensive review of the medicinal ingredient.

Notes

- For the purpose of this monograph, hydrolyzed collagen has no jelling power and is soluble in cold water (Schrieber and Gareis 2007; Moskowitz 2000). The average molecular weight of hydrolyzed collagen is approximately 2-6 kDa (Moskowitz 2000; Oesser et al. 1999).
- Text in parentheses is additional optional information which can be included on the PLA and product label at the applicant's discretion.
- The solidus (/) indicates that the terms and/or the statements are synonymous. Either term or statement may be selected by the applicant.

Date June 12, 2013

Proper name(s)

Hydrolyzed collagen (ChemID 2012; ICIDH 2008)

Common name(s)

- Hydrolyzed collagen (ChemID 2012; ICIDH 2008)
- Collagen hydrosylate (ChemID 2012; ICIDH 2008; Moskowitz 2000)

Source material(s)

- Porcine skin (FCC 7; Baziwane and He 2003)
- Porcine bones (FCC 7; Baziwane and He 2003)
- Fish skin (FCC 7; Baziwane and He 2003)
- Fish bones (FCC 7; Baziwane and He 2003)
- Bovine skin/hide split (FCC 7; Schrieber and Gareis 2007; Baziwane and He 2003)
- Gallus gallus (chicken) cartilage (Schauss et al 2012)

Route(s) of administration

Oral

Dosage form(s)

- The acceptable pharmaceutical dosage forms include, but are not limited to capsules, chewables (e.g. gummies, tablets), liquids, powders, strips or tablets.
- This monograph is not intended to include foods or food-like dosage forms such as bars, chewing gums or beverages.

Use(s) or Purpose(s) Statement(s) to the effect of

- Source of the essential amino acids histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, valine for the maintenance of good health and involved in protein synthesis (CNF 2010; Eastoe 1955).
- Source of the non-essential amino acids alanine, arginine, aspartic acid, glutamic acid, glycine, proline, serine, tyrosine involved in protein synthesis (CNF 2010; Eastoe 1955).
- Source of the essential amino acid lysine to help in collagen formation (derMarderosian and Beutler 2011; Baziwane and He 2003; Garrison and Somer 1995; Jansen 1962).
- Helps to reduce joint pain associated with osteoarthritis (Bruyère et al. 2012; Benito-Ruiz et al. 2009; Clark et al. 2008).

Dose(s)

Quantity(ies)

Source of the essential amino acids histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, valine

Minimum 5%[1] of each specific amino acid Recommended Dietary Allowance[2] to a maximum of 10 g hydrolyzed collagen, per day (JC 2012; Benito-Ruiz et al. 2009; IOM 2005; Moskowitz 2000).

Source of the non-essential amino acid(s) (alanine, arginine, aspartic acid, glutamic acid, glycine, proline, serine, tyrosine)

Minimum 5%[1] of each specific amino acid Mean Intake[3] to a maximum of 10 g hydrolyzed collagen, per day (JC 2012; Benito-Ruiz et al. 2009; IOM 2005; Moskowitz 2000).

Source of lysine

Minimum 5%[1] of the Recommended Dietary Allowance[2] to a maximum of 10 g hydrolyzed collagen, per day (derMarderosian and Beutler 2011; IOM 2005; Flodin 1997).

Joint pain

1.2 – 10 g hydrolyzed collagen, per day (Bruyère et al. 2012; Benito-Ruiz et al. 2009; Clark et al. 2008).

[1] The rationale used to support a minimum dose of 5% of the RDA or MI is based on the *Food and Drug Regulations* for making a health claim on food containing vitamins and minerals (JC 2012).
[2] See Appendix 1 for the Recommended Dietary Allowance (RDA).
[3] See Appendix 1 for the Mean Intake (MI).

Refer to Appendix 2 for examples of dosage preparations. The purpose of Appendix 2 is to provide guidance to industry.

Duration(s) of use

Joint pain

Use for a minimum of 5 months to see beneficial effects (Bruyère et al. 2012; Benito-Ruiz et al. 2009; Clark et al. 2008).

Risk information

Statement(s) to the effect of

Caution(s) and warning(s)

Doses above 2.8 g hydrolyzed collagen, per day

- If you are pregnant or breastfeeding, consult a health care practitioner prior to use.
- If you have liver or kidney disease or if you have been instructed to follow a low protein diet, consult a health care practitioner prior to use (Shils et al. 2006; Goldman and Ausiello 2004).

Contraindication(s)

No statement required.

Known adverse reaction(s)

May cause mild gastrointestinal disturbances (Moskowitz 2000).

Non-medicinal ingredients

Must be chosen from the current NHPD *Natural Health Products Ingredients Database* (NHPID) and must meet the limitations outlined in the database.

Storage conditions

Protect from heat and moisture (Ph.Eur. 2012).

Specifications

- The finished product specifications must be established in accordance with the requirements described in the NHPD *Quality of Natural Health Products Guide*.
- The medicinal ingredient must comply with the requirements outlined in the *Natural Health Products Ingredients Database* (NHPID). In addition, the medicinal ingredient may comply with the specifications outlined in the Gelatin Monograph published in the British, European, or United States Pharmacopoeias.

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Appendix 1 Minimum doses for Amino Acids present in Hydrolyzed Collagen

Table 1 Recommended Daily Allowance (RDA) and minimum doses[1] for essential amino acids present in hydrolyzed collagen

Essential Amino Acids	RDA[2] (mg/kg/d)	Minimum doses (mg/d)
Histidine	14	49
Isoleucine	19	66.5
Leucine	42	147
Lysine	38	133
Methionine	19	66.5
Phenylalanine	33	115.5
Threonine	20	70
Valine	24	84

[1] Minimum doses have been calculated as 5% of the RDA with a reference weight of 70kg.
[2] IOM 2005

Table 2 Mean Intake and minimum doses[1] for non-essential amino acids present in hydrolyzed collagen

Non-Essential Amino Acids	Mean Intake[2] (g/d)	Minimum doses (mg/d)
Alanine	3.63	181.5
Arginine	4.17	208.5
Aspartic acid	6.52	325
Glutamic acid	15.22	750
Glycine	3.2	160
Proline	5.19	259.5
Serine	3.51	175.5
Tyrosine	2.78	139

[1] Minimum doses have been calculated as 5% of the Mean Intake.
[2] IOM 2005

Appendix 2 Examples of dosage preparations and duration of use for Hydrolyzed Collagen

- 10 g hydrolyzed collagen, per day, for two months (Adam 1991)
- 10 g collagen hydrolysate, per day, for 24 weeks (Moskowitz 2000)
- 10 g hydrolyzed collagen, per day, for 6 months (Benito-Ruiz et al. 2009)