81C Concord Avenue
Mount Maunganui 3116
ph. +64 7 575 0602
info@nutramed.co.nz
www.nutramed.co.nz

glo® BY NUTRAMED INGREDIENT TECHNICAL INFORMATION

DEER VELVET

1.0 Source and processing

NutraMed's Deer Velvet is sourced from the antlers of Red Deer from free roaming farms in the south island of New Zealand and is harvested under some of the world's most stringent standards.

The following is an excerpt is from the 'Deer Velvet Technical Manual –Version 6.4' published by Deer Industry New Zealand.

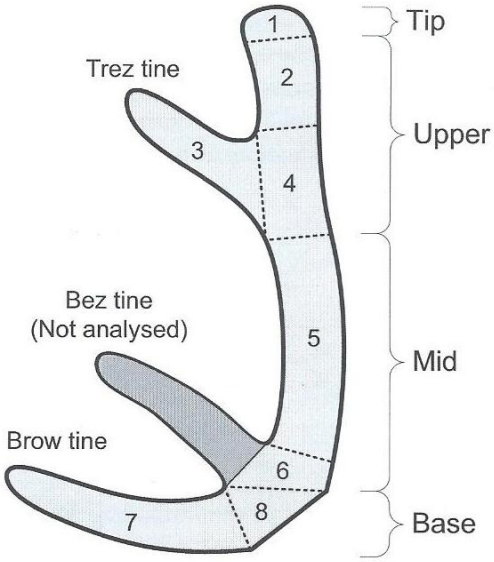
> *"WELFARE OF THE DEER DURING VELVET REMOVAL"*
>
> *"In New Zealand, velvet removal can only be carried out in accordance with rigorous mandatory protocol that requires trained operators to use approved procedures designed to ensure the welfare of the stags. It is important to note that pain control during velvet removal is ensured by use of local or general anaesthetic. Velvet antler can be removed only by veterinarians or specially trained and registered farmers, and the farmers may remove velvet only from their own deer. New Zealand Government legislation called the animal welfare act 1999 and the code of Recommendations and Minimum Standards for the Welfare of Deer During the Removal of Antlers 1992 set the standards. The National Velveting Standards Body(NVSB), which is jointly administered by Deer Industry New Zealand and the New Zealand Veterinary Association, has overall responsibility for managing and ensuring the integrity of the NVSB programme. The programme is endorsed by the National Animal Welfare Advisory Committee (NAWAC). NAWAC is a committee set up and administered by the New Zealand Government's MPI Biosecurity. NAWAC's functions include advising the Minister of Agriculture and Forestry on matters relating to animal welfare.*
>
> *Red deer that are kept for velvet production are farmed in extensive pastoral systems with few other interventions apart from routine health procedures. Thus they generally have a life of good quality. Velvet removal benefits the welfare of the stags by reducing the risk of injury by fighting during the mating season."*
>
> *"STRIGENT HEALTH STANDARDS"*
>
> *"Once removed, the velvet antler is frozen on farm and hygienically processed as required by the Ministry of Primary Industries (MPI) and the New Zealand Food Safety Authority. Processing is subject to inspection by MPI and audits are performed at least every three months depending on the plant's performance.*

Once the frozen deer antler (sticks) are received at our processing plant they are cold air dried for some time and then steam treated and finally processed fit for human consumption. Our deer velvet is comprised from all sections of the antler ensuring consistency (see figure 1. Below). All of this is carried out under a Ministry of Primary Industries Risk Management Program (MPI RMA) which far exceeds any required compliance in New Zealand enabling an export quality product.

2.0 Composition

1. **Collagen** -Collagen is a major constituent of deer velvet and of the family of over 20 proteins, four types of collagen (I, II, III and X) have been identified in velvet.
2. **Amino Acids** - Amino acids are the building blocks of all proteins, and are important nutritive components of the diet. Owing to the very high protein content, deer velvet is rich in amino acids. Glycine and proline are major amino acids found in velvet, reflecting its high collagen content. Velvet is also rich in glutamic acid, aspartic acid, alanine, arginine and leucine.
3. **Lipids** - The lipid fraction of velvet antler is highly complex. Free fatty acids, mono-, di- and triglycerides, neutral lipids, gangliosides, lecithin, cephalin, phospholipids and prostaglandins have been detected. The fatty acid profile of velvet antler has been reported by a number of authors. Sphingomyelin is a sphingophospholipid which is thought to have antioxidant properties.

2.1 Figure 1. Antler sections used for analysis of composition in New Zealand Studies



2.2 Table 1. Composition of adult New Zealand red deer velvet

Data are mean values with the standard deviation for the components in each of the four main sections of the antler and the combined total.

	Antler Section				
	Tip	**Upper**	**Mid**	**Base**	**Combined**
% of antler dry weight	2.7	35.3	29.8	32.5	100
Components (% Dry Matter ± Standard Deviation)					
Ash	6.6 ± 0.75	28.4 ± 2.4	37.8 ± 2.6	38.8 ± 2.2	34.0 ± 2.0
Calcium (Ca)	0.29 ± 0.22	9.3 ± 1.0	13.5 ± 1.2	14.7 ± 1.8	12.1 ± 1.1
Lipid	5.6 ± 1.3	2.7 ± 0.69	2.0 ± 0.47	2.6 ± 0.65	2.5 ± 0.56
Magnesium (Mg)	0.05 ± 0.01	0.21 ± 0.02	0.27 0.02	0.28 ± 0.02	0.25 ± 0.02
Nitrogen (N)	12.2 ± 0.63	9.1 ± 0.52	8.1 ± 0.63	7.6 ± 0.61	8.4 ± 0.51
Phosphorus (P)	0.64 ± 0.11	5.0 ± 0.75	6.3 ± 0.51	6.5 ± 0.36	5.8 ± 0.32
Potassium (K)	0.91 ± 0.12	0.59 ± 0.06	0.33 ± 0.06	0.29 ± 0.04	0.42 ± 0.43
Sodium (Na)	1.09 ± 0.15	0.90 ± 0.08	0.80 ± 0.04	0.77 ± 0.05	0.83 ± 0.04
Sulphur (S)	0.85 ± 0.11	0.54 ± 0.03	0.35 ± 0.03	0.34 ± 0.04	0.43 ± 0.03
Trace mineral components (mg per kg Dry Matter ± Standard Deviation)					
Cobalt (Co)	0.05 ± 0.05	0.04 ± 0.06	0.03 ± 0.03	0.03 ± 0.03	0.04 ± 0.03
Copper (Cu)	5.2 ± 1.1	5.1 ± 0.7	5.6 ± 0.8	5.3 ± 0.8	5.3 ± 0.5
Iron (Fe)	462 ± 227	472 ± 92	288 ± 100	179 ± 53	319 ± 69
Manganese (Mn)	2.6 ± 1.4	3.2 ± 0.8	3.4 ± 0.6	3.5 ± 0.8	3.4 ± 0.4
Selenium (Se)	0.35 ± 0.12	0.25 ± 0.09	0.14 ± 0.06	0.13 ± 0.05	0.18 ± 0.07

2.3 *Table 2. Free amino acid concentrations in sections of New Zealand red deer*

Values given are the means on umol/g (Suttie et al. 1993b). SED is the standard error of the difference between any two means in the same row.

Amino Acid	Antler Section							
	1	2	3	4	7	8	SED	Sig
α-Amino-n-butyric acid	0.08	0.11	0.06	0.03	0.02	0.02	0.03	*
α -Aminoadipic acid	0.33	0.27	0.29	0.12	0.07	0.03	0.03	***
Alanine/Histidine	22.45	13.65	16.37	6.89	5.34	2.34	0.79	***
Arginine	1.92	1.47	2.04	0.95	1.05	0.37	0.12	***
Asparagine	2.01	1.34	1.25	0.41	0.33	0.07	0.14	***
β-Aminoisobutyric acid	0.37	0.54	0.70	0.41	0.25	0.05	0.06	***
Carnosine	0.15	0.25	0.12	0.19	0.03	0.02	0.07	*
Citrulline	1.02	0.65	1.16	0.62	0.34	0.13	0.05	***
Cysteine	0.32	0.17	0.23	0.09	0.06	0.03	0.05	***
γ-Amino-n-butyric acid	0.15	0.09	0.12	0.06	0.11	0.07	0.01	***
Glutamic acid	25.52	12.68	10.73	3.46	2.13	1.14	1.16	***
Glycine	10.00	7.73	8.77	5.13	4.03	1.85	0.57	***
Hydroxylysine	0.25	0.25	0.26	0.16	0.16	0.04	0.07	ns
Hydroxyproline	0.98	1.54	1.10	0.51	0.39	0.46	0.19	***
Isoleucine	2.07	1.54	1.92	1.09	0.74	0.26	0.08	***
Leucine	4.62	8.12	7.95	5.99	3.98	1.06	0.78	***
Lysine	4.22	3.56	4.67	3.89	2.22	0.65	0.20	***
Methionine	1.03	1.53	1.26	1.13	0.76	0.19	0.19	***
1- Methylhistidine	0.29	0.23	0.17	0.13	0.03	ND	0.19	ns
3-Methylhistidine	1.45	0.92	1.11	0.56	0.27	0.21	0.11	***
Ornithine/Trptophan	1.60	1.00	1.15	1.05	0.32	0.18	0.12	***
Phosphoethanolamine	ND	0.03	0.05	0.02	ND	0.01	0.03	ns
Phenylalanine	1.42	2.68	2.79	1.95	1.27	0.37	0.25	***
Proline	3.56	3.27	4.39	2.59	1.90	0.85	0.18	***
Phosphoserine	0.11	0.66	0.70	0.35	0.23	0.09	0.13	***
Serine	4.96	2.89	3.35	1.70	1.46	0.51	0.21	***
Taurine	7.53	5.37	7.41	4.61	4.38	2.07	0.47	***
Threonine	4.37	3.02	3.21	1.76	1.29	0.55	0.18	***
Tyrosine	1.66	1.24	1.63	0.90	0.63	0.23	0.07	***
Valine	5.65	4.63	5.19	3.46	2.26	0.87	0.26	***
Essential	25.29	26.56	29.02	20.22	13.57	4.33	1.68	***
Total	111.4	83.42	92.10	51.34	37.32	15.32	4.32	***

HYALURONIC ACID

0.0 About Hyaluronic Acid

Hyaluronic acid is an important natural component of skin produced by fibroblast skin cells, which decreases as you age. Hyaluronic acid is a natural compound found in skin that has many important functions; including holding in moisture, providing cushioning, aiding in tissue repair, holding together the skin structural components collagen and elastin, and helping create a protective barrier against microorganisms. Skin starts losing hyaluronic acid as early as age 18, but wrinkles and other skin damage from hyaluronic acid loss don't generally show up until the late 30s or early 40s. Maintaining or regenerating hyaluronic acid in the body by oral ingestion of it has been widely studied and proven to be effective by clinical trials.

1.0 Origins

Hyaluronic acid in the past was primarily derived from rooster combs and certain parts of bovine, but given the increasing concern about animal derived ingredients, a method was developed in 1989 to extract hyaluronic acid from vegetable sources such as soybean or corn, using a fermentation process involving bacteria. Bacteria are used in fermenting many products such as wine, beer, cheese, yoghurt and even the leavening of bread. This process creates a very high quality Hyaluronic Acid that is safe, has excellent anti-aging properties and is vegetable sourced.

2.0 Quality

The main important factors with Hyaluronic Acid to determine its effectiveness through oral ingestion is its purity and molecular weight.

The purity of Hyaluronic Acid is crucial in its effectiveness and has been shown to retain up to 1000 times its weight in water within the cells of skin. In order for the body utilise the replenishing properties of Hyaluronic Acid it must be able to be absorbed. The lower molecular weight, the quicker and more efficient Hyaluronic Acid is absorbed into the body, before stomach acid can degrade it, while the heavier weight HA supplements are broken down by stomach acid and enzymes and enter the circulation as fragments of HA.

3.0 Our source

NutraMed's Hyaluronic Acid is derived from the glucose in corn using the above described fermentation process. This process ensures the highest purity Hyaluroinc Acid with the lowest molecular weight. Our Hyaluronic Acid has a purity of no less than 95% and a molecular weight of no more than 750,000 Dalton's and is regarded as 'cosmetic grade' which far exceeds expected standards for use in a dietary supplement and is unique to our product. Due to relatively limited supplies available worldwide we have selected manufactures based in Japan, China and America and we source our Hyaluronic Acid from whomever has fresh stocks with the above stated quality.

SIBERIAN GINSENG

1.0 About Siberian Ginseng

A powerful adaptogen, ginseng is a proven tonic for overall immunity, vitality, mental alertness and longevity. The most valuable part of the plant is its root, full of vitamins A, B, C, D, E, essential oils, essential fatty acids, resins, alkaloids and a range of minerals. The root needs to grow for over 4 years before being harvested.

2.0 Benefits

Due to its wealth of micro-elements, vitamins, essential oils and fatty acids, ginseng is a valuable component for skincare, particularly as an anti-aging ingredient. As an antioxidant and tonic, ginseng stimulates cellular renewal, strengthens skin's immunity to harmful environment, boosts blood circulation and brings oxygen to skin. Ginseng tones and energizes skin, enhancing its firmness and elasticity.

VITAMIN C

1.0 About Vitamin C

Vitamin C, also known as ascorbic acid, is an essential everyday requirement for the body and is present in many of the foods we consume every day. Your body needs vitamin C, a water-soluble vitamin, to manufacture collagen, which is a structural component of cartilage, ligament, tendons, blood vessels and skin. Humans, unlike most animals, are unable to synthesize vitamin C endogenously, so it is an essential dietary component.

2.0 Benefits

Vitamin C is a normal skin constituent that is found at high levels in both the dermis and epidermis but decreases with age. The powerful antioxidant properties of vitamin C is used to protect your body's cells from damage from free radicals and its role in collagen synthesis make vitamin C a vital molecule for skin health.

Vitamin C has also be shown to help absorb other vitamins and minerals, especially iron, into the bloodstream acting as a 'transporter' to deliver these vitamins and minerals to where they are needed the most.

Dietary ascorbic acid has beneficial effects on skin cells and oral supplementation with vitamin C effectively increases vitamin C levels in the skin.

WATER

Water is defined as an essential nutrient because it is required in amounts that exceed the body's ability to produce it. All biochemical reactions occur in water. It fills the spaces in and between cells and helps form structures of large molecules such as protein and glycogen. Water is also required for digestion, absorption, transportation, dissolving nutrients, elimination of waste products and thermoregulation (Kleiner 1999) and is therefore essential in aiding any dietary supplement to be effective.

We believe that a recommended daily intake for an average sized woman should be no less than 1.5 litres daily.

SUMMARY

Each of our four ingredients found in glo® Anti-Ageing Dietary Supplement are backed by scientific research and trials and are shown to be effective in their individual roles when targeting the skin via oral ingestion. Each of the ingredients; although very closely related in their function, have very unique target areas in the body, in particular but not limited to, the dermis and epidermis. When taken together these ingredients provide an overall approach to reduce and reverse the signs of ageing in the skin, hair, nails and connective tissue.

To simplify the roles of ingredient each it could be said that:

- **Deer Velvet** provides essential amino acids, collagen, lipids and growth hormones to the skin and connective tissue.
- **Hyaluronic Acid** provides essential moisture, aiding in tissue repair and holding the structure of the skin together.
- **Siberian Ginseng** provides excellent immunity, mental alertness, energy and vitality allowing other vitamins and minerals a clear pathway to carry out their roles.
- **Vitamin C** provides excellent antioxidant properties to act as a free radical scavenger to protect cells from damage and assists in the absorption of other vitamins and minerals.
- **Water** is essential in providing the body with the mechanisms required to deliver any nutrients.

All of these ingredients are proven effective with no reports of any adverse side effects with dosages provided in our formula.