

# Canine Flex Support

## Provides Targeted Joint Support

Canine Flex Support is designed to improve the comfort of a dog dealing with joint issues, as well as support the normal repair and rebuilding of cartilage for smooth, unrestricted movement. This product may be recommended for prevention, especially for large breeds, performance dogs, and growing puppies. It can also be given for long-term support, especially for active or aging dogs.

## What Makes Canine Flex Support Unique

### Research-Supported Ingredients

**Ginger**—Historically used across the world, to support human health, mostly for nausea and digestion. It is included here as a natural analgesic; ginger contains a spectrum of compounds that moderate the body's normal inflammation response.

- ▶ Multiple compounds (gingerols, paradols, shogaols) have anti-inflammatory activity, including inhibition of cyclooxygenase-2 (COX-2) activity in cells, rat models, and humans
- ▶ Also used for immune and stomach support in companion animals

**Turmeric**—With a long history of use, and in the same family as ginger, turmeric has a spectacular pedigree and is one of nature's most potent antioxidants.

- ▶ Contains compounds called curcumin and curcuminoids, that act as natural COX-2 inhibitors in the body, and also inhibit the production of the prostaglandins that cause inflammation and swelling
- ▶ In animal models, curcumin inhibits at least 30 known inflammatory pathways that can affect long-term function of the brain, cardiovascular system, glucose-handling mechanisms, respiratory system, intestinal tract, joint function, and skin health.

**Glucosamine sulfate**—This compound is naturally produced in the human body, and is needed for formation of the components in cartilage. It helps stimulate cartilage growth and maintain joint health and is especially helpful for knee health, and joint comfort and use.

**Chondroitin sulfate**—This substance is a major component of cartilage associated with a joint and supports healthy joint function by absorbing fluid into the connective tissue. It is one of the building blocks of cartilage. In combination with glucosamine, chondroitin sulfate may support both knee and hip joint comfort and use.



Product Number: A1480

Introduced in: 2011

Content: 100 Wafers

**Dose Size:** 1 wafer

**Doses Per Container:** 100

### Ingredients:

Glucosamine (as glucosamine sulfate)  
(shellfish source) ..... 250 mg  
Chondroitin (as chondroitin sulfate)  
(bovine source)..... 110 mg  
Vitamin E (as mixed tocopherols) (soy)..... 5 IU  
Vitamin C (as ascorbic acid) ..... 5 mg

### Other Ingredients:

Honey, ginger root, bovine liver, maltodextrin, gum acacia, turmeric extract, and calcium stearate.

### Dose Schedule:

Based on body weight, the canine patient should receive the canine formula wafer according to the following recommendations or as otherwise directed.

1-25 lbs ..... 1 wafer / day  
26-50 lbs ..... 2 wafers / day  
51-80 lbs ..... 3 wafers / day  
> 80 lbs ..... 4 wafers / day

Sold through health care professionals.

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**Vitamin E (mixed tocopherols)**—This vitamin complex plays an important role in protection from reactive oxygen species produced through normal metabolism and natural inflammatory processes.

**Vitamin C**—This important micronutrient is part of the collagen synthesis pathway and helps the immune system by supporting:

- ▶ Mucosa
- ▶ Cell function
- ▶ Skin, blood vessels, and other structural tissue via its role in collagen synthesis
- ▶ Antioxidant activity
- ▶ May help re-form other vitamins like vitamin E

**Liver powder**—enhances palatability.

	Turmeric	Ginger	Glucosamine	Chondroitin	Vitamin E	Vitamin C
Comfort	x	x	x	x		
Cartilage			x	x		
Joint lubrication				x		
Immune modulation	x	x			x	x

The formulation of this product is based on research involving a variety of species. Although the physiology/biochemistry of these models appears to be similar, we do not have direct measures in companion animals except where noted.

- <sup>1</sup> Med Food. 2005 Summer;8(2):125-32. Ginger—an herbal medicinal product with broad anti-inflammatory actions. Grzanna R, Lindmark L, Frondoza CG.
- <sup>2</sup> Fitoterapia. 2011 Jan;82(1):38-43. Epub 2010 Sep 15. Cyclooxygenase-2 inhibitors in ginger (*Zingiber officinale*). van Breemen RB, Tao Y, Li W.
- <sup>3</sup> Oncogene. 2005 Apr 7;24(15):2558-67. [6]-Gingerol inhibits COX-2 expression by blocking the activation of p38 MAP kinase and NF-kappaB in phorbol ester-stimulated mouse skin. Kim SO, Kundu JK, Shin YK, Park JH, Cho MH, Kim TY, Surh YJ.
- <sup>4</sup> Cancer Lett. 1998 Dec 25;134(2):163-8. Induction of apoptosis in HL-60 cells by pungent vanilloids, [6]-gingerol and [6]-paradol. Lee E, Surh YJ.
- <sup>5</sup> J Med Food. 2010 Feb;13(1):156-62. Anti-inflammatory properties of red ginger (*Zingiber officinale* var. *Rubra*) extract and suppression of nitric oxide production by its constituents. Shimoda H, Shan SJ, Tanaka J, Seki A, Seo JW, Kasajima N, Tamura S, Ke Y, Murakami N.
- <sup>6</sup> BMC Pharmacol. 2006 Oct 1;6:12. 6-Shogaol reduced chronic inflammatory response in the knees of rats treated with complete Freund's adjuvant. Levy AS, Simon O, Shelly J, Gardener M.
- <sup>7</sup> Phytother Res. 2006 Sep;20(9):764-72. Analgesic, antiinflammatory and hypoglycaemic effects of ethanol extract of *Zingiber officinale* (Roscoe) rhizomes (Zingiberaceae) in mice and rats. Ojewole JA.
- <sup>8</sup> J Pain. 2010 Sep;11(9):894-903. Epub 2010 Apr 24. Ginger (*Zingiber officinale*) reduces muscle pain caused by eccentric exercise. Black CD, Herring MP, Hurley DJ, O'Connor PJ.
- <sup>9</sup> J Ethnopharmacol. 2008 Jul 23;118(2):213-9. Epub 2008 Mar 29. Ethnoveterinary practices for the treatment of parasitic diseases in livestock in Cholistan desert (Pakistan). Farooq Z, Iqbal Z, Mushtaq S, Muhammad G, Iqbal MZ, Arshad M.
- <sup>10</sup> Vet Parasitol. 2007 Sep 30;148(3-4):325-40. Epub 2007 Jul 12. Ethnoveterinary medicines used to treat endoparasites and stomach problems in pigs and pets in British Columbia, Canada. Lans C, Turner N, Khan T, Brauer G.
- <sup>11</sup> Methods Find Exp Clin Pharmacol. 2009 Mar;31(2):89-93. Curcumin potentiates the anti-inflammatory activity of cyclooxygenase inhibitors in the cotton pellet granuloma pouch model. Nandal S, Dhir A, Kuhad A, Sharma S, Chopra K.
- <sup>12</sup> Chainani-Wu, N. (2003) Safety and anti-inflammatory activity of curcumin: a component of turmeric (*Curcuma longa*). *J Altern Complement Med.* 9(1):161-8.
- <sup>13</sup> Int J Biochem Cell Biol. 2009 Jan;41(1):40-59. Epub 2008 Jul 9. Potential therapeutic effects of curcumin, the anti-inflammatory agent, against neurodegenerative, cardiovascular, pulmonary, metabolic, autoimmune and neoplastic diseases. Aggarwal BB, Harikumar KB.
- <sup>14</sup> Osteoarthritis Cartilage. 2008 Feb;16(2):254-60. Epub 2007 Jul 27. Total joint replacement after glucosamine sulphate treatment in knee osteoarthritis: results of a mean 8-year observation of patients from two previous 3-year, randomised, placebo-controlled trials. Bruyere O, Pavelka K, Rovati LC, Gatterová J, Giacobelli G, Olejarová M, Deroisy R, Reginster JY.
- <sup>15</sup> Lancet. 2001 Jan 27;357(9252):251-6. Long-term effects of glucosamine sulphate on osteoarthritis progression: a randomised, placebo-controlled clinical trial. Reginster JY, Deroisy R, Rovati LC, Lee RL, Lejeune E, Bruyere O, Giacobelli G, Henrotin Y, Dacre JE, Gossett C.
- <sup>16</sup> Cochrane Database Syst Rev. 2005 Apr 18;(2):CD002946. Glucosamine therapy for treating osteoarthritis. Towheed TE, Maxwell L, Anastassiades TP, Shea B, Houpt J, Robinson V, Hochberg MC, Wells G.
- <sup>17</sup> Ann Rheum Dis. 2011 Jun;70(6):982-9. Epub 2011 Mar 1. Chondroitin sulphate reduces both cartilage volume loss and bone marrow lesions in knee osteoarthritis patients starting as early as 6 months after initiation of therapy: a randomised, double-blind, placebo-controlled pilot study using MRI. Wildi LM, Raynauld JP, Martel-Pelletier J, Beaulieu A, Bessette L, Morin F, Abram F, Dorais M, Pelletier JP.
- <sup>18</sup> Drugs Aging. 2007; 24(7):573-80. Glucosamine and chondroitin sulfate as therapeutic agents for knee and hip osteoarthritis. Bruyere O, Reginster JY.
- <sup>19</sup> Traber MG. Vitamin E. In: Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, eds. *Modern Nutrition in Health and Disease*. Philadelphia: Lippincott Williams & Wilkins; 2006:396-411.
- <sup>20</sup> Maggini S, Wintergerst E, Beveridge S, Hornig D. Selected vitamins and trace elements support immune function by strengthening epithelial barriers and cellular and humoral immune responses. *Br J Nutr.* 2007;98(Suppl 1):S29-S35.