



# HIP & JOINT

## NUTRITIONAL SUPPORT

### JOINT HEALTH & MOBILITY

**ARTHRITIS** is a progressive degenerative joint disease, characterized by **CHRONIC INFLAMMATION, IMMUNE DYSFUNCTION, and JOINT DESTRUCTION**. The symptoms include stiff, swollen and painful joints, reduced mobility, impaired emotional well-being, and impaired performance. Joint diseases have a major impact on life quality and expectancy of your companion animal.

#### FACTORS THAT INCREASE THE RISK OF ARTHRITIS:

- poor nutrition
- aging, genetics
- hormone imbalance
- developmental dysplasia like hip dysplasia
- injuries
- joint over-activity
- infections
- toxic chemicals
- heavy metals
- excess body weight
- immune dysfunction

**UNTAMED HIP & JOINT** provides three powerful nutraceuticals Boswellia, Turmeric 95% extract (a highly concentrated curcumin extract), and Glucosamine Sulphate, which are proven significantly effective, by scientific research, for the treatment of joint disease. These nutraceuticals are combined with Whey Protein, Spirulina and Kelp, to provide superior, and natural joint protection, alleviate pain and tissue degeneration, and enhance the quality of an active life. In contrast to non-steroidal anti-inflammatory drugs, these extracts not only have an excellent safety profile with minimal side effects, they also nourish the body, and promote better health.

#### ANTI-INFLAMMATORY PROTECTION

Inflammation is a natural process by which the body promotes healing, and protects itself against damage caused by injury, infection, free radicals and foreign substances. There are however many risk factors, as those mentioned above, that induce chronic inflammation and promote infiltration of inflammatory agents into the joints. If not controlled, these agents cause constant swelling, pain, and eventually degeneration of joint tissue. Consequently, arthritis sets in, with a debilitating effect on mobility and well-being.

**CURCUMIN**, extracted from **TURMERIC (Curcuma longa)** is one of the most researched, and effective anti-inflammatory plant extracts. It reduces inflammation by multiple mechanisms like inhibiting pro-inflammatory signaling, inhibiting immune cell migration to the active site of inflammation, and reducing excessive existing inflammation by decreasing the activity of inflammatory enzymes<sup>1-7</sup>. Curcumin illustrates pronounced potential to

reduce joint pain, enhance articular function, and improve quality of movement<sup>10-12</sup>.

**BOSWELIA (Boswellia serrata)** is a powerful anti-inflammatory plant extract. It demonstrates pronounced clinical efficacy in the treatment of painful inflammatory conditions like muscle injuries and arthritic diseases. Boswellia's mechanisms of action in arthritic treatment include: inhibition of inflammatory agents, improvement of blood circulation to the joints, alleviation of pain, and decreased joint swelling. In contrast to non-steroidal anti-inflammatory drugs (NSAIDS) which disrupt glycosaminoglycan synthesis, Boswellia inhibits inflammation-induced degeneration of glycosaminoglycans levels, supporting the structural strength of the joints.<sup>30,31</sup> Research validates that Boswellia can significantly improve joint flexibility, and mobility<sup>32</sup>.

**SPIRULINA** provides exceptional antioxidant activity against oxidative damage caused by physiological

processes, heavy metals and toxic chemicals. Oxidative stress causes cellular dysfunction and tissue degeneration, increasing the risk of various chronic diseases, including arthritis. Spirulina activates antioxidant enzymes, inhibits fat oxidation and oxidative DNA damage, and scavenges inflammatory free radicals<sup>23</sup>. Its antioxidant properties in combination with its anti-inflammatory actions, may protect mobility by reducing exercise-induced oxidative muscle damage<sup>24</sup>, and alleviating arthritic symptoms like swelling, inflammation, cartilage degeneration, and liver stress<sup>29,55</sup>.

#### HEALTHY CARTILAGE & STRUCTURAL SUPPORT

During aging or reduced activity, muscle mass and strength declines, and body weight may unhealthily increase. This predisposes the animal to decreased joint stability and misalignment. Consequently, with increased mechanical stress, degenerative inflammation sets in, deteriorating cartilage and joints.

**WHEY PROTEIN CONCENTRATE:** UNTAMED HIP & JOINT is fortified with Whey Protein, a complete and nutrient-rich protein source. Whey Protein Concentrate is rich in amino acids, which inhibit muscle degeneration, and stimulate muscle protein synthesis, helping to maintain your animal's lean muscle mass and strength. Enhancing the strength of the muscles surrounding the joints may improve structural joint support, and decrease the risk of joint injuries<sup>51,52</sup>. Protein also provides amino acids for proteoglycan and collagen production, which are essential building blocks in the extracellular matrix<sup>53</sup>. The extracellular matrix is present in all tissues, like the joints, muscles, tendons, cartilage, skin, and organs. It provides structural support to the tissues and maintains proper hydration. Protein is also responsible for vital biochemical and biomechanical processes involved in healthy tissue development.

**TURMERIC 95% EXTRACT/CURCUMIN** is well researched for its powerful anti-inflammatory actions. And with its protective properties in cartilage<sup>8</sup>, it has exceptional medical value in the treatment of arthritic diseases. Research shows that highly concentrated curcumin extract stimulates the production of glycosaminoglycans, chondrocytes, and type II collagen which are involved in the formation and structural integrity of cartilage<sup>9</sup>. It also inhibits inflammation-induced degeneration of cartilage and chondrocytes<sup>13,14</sup>. Curcumin further reduces joint inflammation and joint destruction by inhibiting bone resorption osteoclast cells, and blocking expression of pro-inflammatory genes, inflammatory

enzymes like COX-2, and other inflammatory mediators that promotes joint degeneration<sup>25</sup>.

**GLUCOSAMINE SULPHATE** is a superior form of glucosamine due to its enhanced bio-availability. It consists of a structural amino acid, glucosamine, which is abundantly found in joint cartilage, synovial fluid in the joints, and in the intervertebral discs. It also contains sulphur which is required by every cell in the body for efficient function. Sulphur is a vital element for healthy connective tissues, it is utilized in detoxification of toxins, is involved in cellular respiration, promotes healing, and helps to relieve symptoms of arthritis. Research illustrates that Glucosamine Sulphate has a growth-promoting effect on cartilage, and delays cartilage degeneration by various effective antioxidant and anti-inflammatory mechanisms. Studies conclude that long-term supplementation with Glucosamine Sulphate clinically benefits arthritis sufferers by reducing pain, reducing arthritis progression, enhancing joint function and mobility, and decreasing the risk of total joint replacement<sup>15</sup>.

#### IMMUNE MODULATION

The immune system is a complex defense system against foreign substances and pathogenic microorganisms. The immune system produces antibodies from B-lymphocytes (white blood cells), which bind to, and destroy invading organisms. These antibodies are stored in the body to recognize, and destroy a recurring pathogen more effectively during follow up invasion. T-lymphocytes destroy invading pathogens by releasing toxic chemicals. They also release messenger chemicals to attract macrophagic white blood cells which engulf and kill pathogens. T-lymphocytes regulate immune responsiveness to specific agents, and can be divided into Th1 and Th2 cells. Th1 cells are proposed to mostly mediate immune protection against intracellular viruses and certain bacteria, destroy cancerous cells, and activate delayed hypersensitivity skin reactions. Th2 cells mediate immune protection against extracellular bacteria, parasites, allergens, and toxins. Immune dysfunction and over expression of Th1 cells may result in a pro-inflammatory state and organ specific autoimmunity. Over-expression of Th2 is indicated in systemic autoimmunity and chronic allergy related conditions.

**TURMERIC 95% EXTRACT/CURCUMIN** regulates Th1 and Th2 immune responses, as well as production of inflammatory mediators. By modulating immune

function and inhibiting inflammation, Curcumin demonstrates marked clinical efficacy in the treatment of osteo- and rheumatoid arthritis<sup>26,27,49,50</sup>.

**SPIRULINA** is well researched for its immune modulating activities. It may enhance immune function by increasing cellular destruction of infectious agents, increasing antibody protection, and promoting production of other immune modulating chemicals. Spirulina can also reduce immune system hyper-responsiveness as in the case of allergies, arthritis, and organ transplants<sup>54</sup>.

#### SUPER FOOD *complex*

**UNTAMED HIP & JOINT** is fortified with three superfoods: **SPIRULINA, WHEY PROTEIN CONCENTRATE, and KELP.**

**SPIRULINA** has exceptional nutritional properties with its rich composition of antioxidants, protein, fatty acids, fiber, vitamins and minerals. It serves as a prebiotic, supporting a healthy digestive environment, enhances physical performance<sup>45,46</sup>, improves insulin sensitivity and blood glucose control<sup>42,44</sup>, supports immune function, protecting against allergies<sup>47</sup>, provides marked antioxidant protection, supports detoxification of toxic chemicals and heavy metals like fluoride, lead, cadmium, mercury and arsenic<sup>34-38</sup>, promotes liver health<sup>48</sup>, exerts neuroprotective effects, reducing the risk of cognitive decline, Alzheimers' and Parkinson's disease<sup>39-41</sup>, and reduces systemic degenerative inflammation. Spirulina enhances overall health and well-being, and increases protection against various chronic disease like cardiovascular disease<sup>42,43</sup>, skin conditions, allergies, cancer, liver disease, and joint disease<sup>33</sup>.

**WHEY PROTEIN CONCENTRATE**, like the protein provided by Spirulina, is considered a complete protein source, containing all amino acids required for healthy physiological function. Protein is an essential component of all living cells, and a substrate for a multitude of physiological processes.

Whey Protein have significant anti-inflammatory, antioxidant, and immune modulating properties. It enhances protection against toxins, viruses, and bacteria, reduces the risk of various cancers, promotes cardiovascular-, liver-, digestive-, and hormonal health, maintains healthy skin and bone, supports healthy body weight, and promotes a sense of well-being. Whey protein contains amino acids which form vital structural components in muscle cells, ligaments and tendons. Insufficient protein intake predisposes the animal to poor

condition, muscle wasting, osteoporosis, impaired recovery after injury or training, and decreased mental ability. Protein rich diets promote a leaner and healthy body condition, and enhance muscle protein synthesis. Sufficient protein enables your pet to improve muscle composition and physical strength, especially when combined with regular exercise<sup>56,57</sup>.

**KELP** is a nutrient-dense seaweed, rich in minerals, proteins, antioxidants, and bioactives that are not present in terrestrial foods. Kelp supplementation is associated with significant antiviral protection, reduced gum disease and plaque formation on teeth<sup>63</sup>, enhanced cardiovascular health, improved body composition, decreased risk of diabetes and metabolic syndrome, improved digestive health, neuroprotection, decreased risk of cancer, maintenance of bone mineral density, improved joint mobility, and decreased joint pain associated with arthritis<sup>58-62</sup>.

**UNTAMED HIP & JOINT** is an exceptional joint supplement, formulated with natural, human grade extracts, and super foods with significant medicinal value. It is carefully formulated to provide safe and regenerative joint care, and assist your pet in maintaining a healthy, active and happy lifestyle.

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