PAW PURE ANIMAL WELLBEING
By BLACKMORES

OSTEOSUPPORT®

JOINT CARE POWDER FOR DOGS & CATS

PAW OsteoSupport® is a highly concentrated green lipped mussel powder presented in a measured capsule dose, that may provide relief of arthritic symptoms in dogs and cats. Containing optimal levels of omega-3 fatty acids (EPA, DHA & ETA), PAW OsteoSupport® acts as a natural anti-inflammatory for stiff and painful joints.

BENEFITS:

- Contains natural green lipped mussel powder (Perna128®) manufactured using a one-step proprietary process to minimise temperature, enzymatic, or oxidative damage to essential fatty acids for a highly concentrated product.
- Clinically proven to be effective at reducing inflammation.
- High levels of Omega 3 (EPA, DHA & ETA) for fast, effective joint pain relief for dogs and cats.
- Includes a natural source of glycosaminoglycans (chondroitin 6 sulphate), which is a key nutrient required for cartilage production to aid in joint care.
- Measured capsule dose that is easy to administer.
- Highly palatable.

WHEN TO RECOMMEND:

- Ideal for dogs and cats with clinical symptoms of osteoarthritis including: lameness, stiffness, pain, and a reluctance to run and play.
- For dogs and cats that are slowing down with age.
- As an adjunctive for medicated pharmaceutical pain relief for dogs and cats e.g. may help to reduce NSAID usage over the long term.

Each 500mg capsule of PAW OsteoSupport® contains:
100% Perna128® Green Lipped Mussel Powder

Size: Dogs: 80 and 150 capsules, Cats: 60 capsules

Dosage:

Dog's body weight (kg)	Dogs <25 kg	Dogs 25+ kg	Cats
Daily Dose	1 capsule	2 capsules	1 capsule

Administration: To be given daily (either whole, or opened and sprinkled directly onto food).

Warnings/prescribing information:

- Use with precaution in pregnant or lactating animals
- This product is not an alternative treatment in acute joint inflammation
- Contraindicated for use in animals with an allergy to seafood
- For animal treatment only

EDUCATION

Active constituents of green lipped mussel (GLM)

As a whole seafood, GLM is a rich natural source of lipids, multiple trace minerals, vitamins A, B group, D and E, mucopolysaccharides, and essential amino acids. However, its lipid and protein components are considered the most valuable for therapeutic activity.[1] GLM contains the marine omega–3 polyunsaturated fatty acids also found in krill and oily fish such as salmon and tuna, namely EPA (eicosapentaenoic acid) and DHA (docosahexanoic acid). Both of these fatty acids are now established as being vital for healthy eyesight, as well as brain and cardiac development and function in humans. Consequently, a higher fish diet or fish-oil supplementation has become standard medical advice. However, unlike fish oil, which is usually standardised to contain EPA and DHA combined with glycerol as triglycerides, GLM extracts have a higher percentage of EPA and DHA as free fatty acids.[2]

In addition, some GLM extracts contain significant amounts of the relatively rare omega–3 fatty acid ETA (eicosatetraenoic acid).[3] In a study with rats, ETA-rich GLM was found to be a more powerful anti-inflammatory than other omega–3 fatty acids.[4] When compared to the NSAIDs ibuprofen[5], naproxen,[6] and piroxicam[7], it performed similarly or better than these in inhibiting inflammation and/or in arthritis scoring.

Glycosaminoglycans (GAGs), which are carbohydrate–protein molecules that are major components of cartilage and synovial fluid, also abound in GLM. Chondroitin and glucosamine sulphate are two well-known GAGs that have been extensively researched in human arthritis because they may stimulate cartilage matrix production, inhibit enzymes degrading cartilage, and help prevent thrombus, plaque and fibrin formation in blood vessels in the tissues surrounding a joint.[8]

How does GLM work?

Several mechanisms are thought to be involved in the pathogenesis of arthritic joint pain itself, but one certain sign is the presence of synovial inflammation. Dietary factors can potentially modify some of the underlying processes involved in arthritis, including modulation of the inflammatory response, provision of nutrients for cartilage repair, and protection against oxidative damage. Both human and animal studies suggest that the fatty acids in GLM inhibit the production of pro-inflammatory mediators (eicosanoids), leukotrienes, and prostaglandins.[9,10]

ETA, the rare fatty acid that is found in GLM, is thought to be an inhibitor of both the cyclooxygenase (COX) and lipoxygenase (LOX) ‘pain pathways’, and reduces inflammation by blocking the proliferation of eicosanoids.[11]

The importance of GLM processing

Some early studies on GLM extracts produced contradictory or inconsistent results,[12] and it is now thought that the extraction and drying process is key to product efficacy. Heating the raw material for too long, or at too high a temperature increases enzymatic and thermal degradation. In addition, GLM extracts where the fatty acids — especially ETA — are stabilised, appear to have much greater anti-inflammatory effects than unstabilised extracts.[4,5,11]

References:

1. Braun L. & Cohen M. 2007. Herbs & Natural Supplements: An Evidence-Based Guide, 2nd edn. Sydney: Elsevier. **2.** Sinclair AJ et al. 2000. Marine lipids: overview news insights and lipid composition of Lyprinol. Allerg Immunol (Paris), 32(7):261-71. **3.** Treschow AP et al. 2007. Novel anti-inflammatory omega-3 PUFAs from the New Zealand green-lipped mussel, Perna canaliculus. Comparative biochemistry and physiology. Part B, Biochemistry & molecular biology, 147(4):645-656. **4.** Whitehouse MW et al. 1997. Anti-inflammatory activity of a lipid fraction (Lyprinol) from the NZ green-lipped mussel. Inflammopharmacol, 5(3):237-46. **5.** Whitehouse MW et al. 1999. Over the counter (OTC) oral remedies for arthritis and rheumatism:how effective are they? Inflammopharmacol, 7(2):89-105. **6.** Lee CH et al. 2008. A lipid extract of Perna canaliculus affects the expression of proinflammatory cytokines in a rat adjuvant-induced arthritis model. Eur Ann Aller- gy Clin Immunol, 40(4):148-5. **7.** Singh M et al. 2008. The CO2-SFE crude lipid extract and the free fatty acid extract from Perna canaliculus have anti-inflammatory effects on adjuvant-induced arthritis in rats. Comp Biochem Physiol B Biochem Mol Biol, 149(2):251-8. **8.** Bierer TL et al. 2002. Improvement of arthritic signs in dogs fed green-lipped mussel (Perna canaliculus). J Nutr., 132(6 Suppl 2):1634S-1636S. **9.** Halpern CM. 2000. Anti-inflammatory effects of a stabilized lipid extract of Perna Canaliculus (Lyprinol). Allergy Immunol (Paris), 32(7):272-8. **10.** McPhee S et al. 2007. Anti-cyclooxygenase effects of lipid extracts from the New Zealand green-lipped mussel, Perna canaliculus. Comp Biochem Physiol. Pt B, Biochem Mol Biol., 146(3):346-56. **11.** Macrides TA et al. The anti-inflammatory effects of n-3 tetraenoic fatty acids isolated from a lipid extract from the mussel Perna canaliculus. Prostaglandins Leukot Essent Fatty Acids, 57(1):205(W20). **12.** Cobb CS et al. 2006. Systematic review of a marine nutriceutical supplement in clinical trials for arthritis: the effectiveness of the New Zealand green-lipped mussel Perna canaliculus. Clinical Rheumatol., 25(3):275-84.