



**Novel Botanical Pain Solutions for Veterinarians**

## **Curcumin & Boswellia Micellar Solubilized Anti-inflammatory Extract *with NovoSOL®***

### ***More Bioavailable means better results, faster!!***

Proprietary NovoSOL® Curcumin and Boswellia extract is **185x** more bioavailable than native curcumin, rising to the top of an extensive review of commercial curcumin products' bioavailability<sup>1</sup>.

In addition to curcumin's legendary history as a healing botanical in ancient and modern medicine<sup>2</sup>, the resin of *Boswellia serrata* (also known as Frankincense) has long been used in Ayurvedic medicine as anti-arthritic, anti-inflammatory, anti-hyperlipidemic (controls blood lipids), anti-atherosclerotic (anticoronary plaque), analgesic (pain-reliever) and hepatoprotective (protects the liver)<sup>3,\*</sup>

- **Anti-inflammatory Activity:** *By acting as a scavenger of e.g. nitric oxide and by inhibiting COX-2, a pro-inflammatory substance, curcumin may exert its anti-inflammatory activity. Other research confirms, that NovoSOL® curcumin and boswellia substantially suppresses systemic inflammation markers<sup>4</sup> and furthermore suggests that it could ease pain of osteoarthritis and rheumatoid arthritis.*
- **Brain Health:** *Curcumin is associated with positive effects with respect to amelioration of cognitive decay in a mouse model of Alzheimer's disease<sup>5</sup>. Curcumin is a strong antioxidant, that seems to protect the brain from lipid peroxidation and nitric-oxide-based radicals. In a recently published scientific article NovaSOL® Curcumin has been demonstrated to improve neuronal mitochondrial function in a mouse model of Alzheimer's disease<sup>6</sup>.*
- **Anti-Neoplastic Activity:** *Curcumin has been shown to have strong cytotoxic anti-tumor activity<sup>7</sup>, in addition to its powerful influence on apoptosis<sup>8</sup>. Novosol® Curcumin has been shown to have enhanced trans epithelial transport in colorectal adenocarcinoma cells<sup>9</sup>.*
- **Digestive Health:** *Support of the digestive system<sup>10</sup> is another field for curcumin as research suggests that it increases the solubility of bile, and this assists in the elimination of gall stones and prevents further formation of the gall stones.*
- **Skin Health:** *Curcumin treatment in studies has shown to reduce wound-healing time, improved collagen deposition, and increased fibroblast and vascular density in wounds<sup>11</sup>, thereby enhancing both normal and impaired wound-healing. It is also associated with a beneficial effect as a proangiogenic agent by inducing transforming growth factor-beta.*

This micellar preparation has pharmacokinetics<sup>12</sup> that are so powerful, only once a day dosing is needed to maintain therapeutic levels. The dosing chart below is meant as a guide to initiate treatment in a range of canine sizes. It is recommended that you begin loading with a dose at the high end of the animal's weight range, and once stabilized, try reducing the dose to one capsule less.

Each soft gel contains 15 mg micellar curcumin and 30 mg micellar boswellic acid in a solubilized base.

**Suggestions for Use: Give once daily.**

10-20 lb	1 soft gel
25-35 lb	2 soft gels
40-65 lb	3 soft gels
65-90 lb	4 soft gels

*\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.*

<sup>1</sup> Jamwal R (2018) Bioavailable curcumin formulations: A review of pharmacokinetic studies in healthy volunteers. *Journal of Integrative Medicine*, 16:367-374.

<sup>2</sup> Prasad S, Tyagi AK, Aggarwal BB (2014) Recent Developments in Delivery, Bioavailability, Absorption and Metabolism of Curcumin: the Golden Pigment from Golden Spice, *Cancer Res Treat.* 46(1):2-18.

<sup>3</sup> Siddiqui MZ (2011) *Boswellia Serrata*, A Potential Antiinflammatory Agent: An Overview. *Indian J Pharm Sci.* 73(3): 255-261.

<sup>4</sup> Khayyal MT, El-Hazek RM, El-Sabbagh WA et al. (2018) Micellar solubilisation enhances the antiinflammatory activities of curcumin and boswellic acids in rats with adjuvant-induced arthritis. *Nutrition* 54:189-196.

<sup>5</sup> Hagl S, Heinrich M, Kocher A et al. (2014) Curcumin micelles Improve Mitochondrial Function in a Mouse Model of Alzheimer's Disease. *J Prev Alzheimers Dis.* 1(2): 80-83.

<sup>6</sup> Hagl S, Kocher A, Schiborr C, et al. (2016) Curcumin micelles improve mitochondrial function in neuronal PC12 cells and brains of NMRI mice– Impact on bioavailability. *Neurochem Int*, 10: 234-242.

<sup>7</sup> Chen CY, Yang WL, Kuo SY (2011) Cytotoxic activity and cell cycle analysis of hexahydrocurcumin on SW 480 human colorectal cancer cells. *Nat Prod Commun.* 6:1671-2.

<sup>8</sup> Mortezaee K, Salehi E, Mirtavoos-Mahyari H et al. (2019) Mechanisms of apoptosis modulation by curcumin: Implications for cancer therapy *J Cell Physiol.* 2019:1-14.

<sup>9</sup> Frank J, Schiborr C, Kocher A (2017) Transepithelial Transport of Curcumin in Caco-2 Cells Is significantly Enhanced by Micellar Solubilisation, *Plant Foods Hum Nutr.* 72:48-53.

<sup>10</sup> Dulbecco P, Savarino V (2013) Therapeutic potential of curcumin in digestive diseases. *World J Gastroenterol.* 2013 Dec 28; 19(48): 9256-9270.

<sup>11</sup> Akbik D, Ghadiri M, Chrzanowski W, Rohanizadeh R. (2014) Curcumin as a wound healing agent. *Life Sci.* 116(1):1-7.

<sup>12</sup> Khayyal MT, El-Hazek RM, El-Sabbagh WA et al. (2018) Micellar solubilisation enhances the antiinflammatory activities of curcumin and boswellic acids in rats with adjuvant-induced arthritis. *Nutrition* 54:189-196.