

WokVel® is a clinically researched and sustainable *Boswellia serrata* extract, standardised to a proprietary, natural full spectrum of six major boswellic acids targeting the 5-lipoxygenase path, and therefore a great plant based solution for animal joint health support and more.



PRODUCT PROFILE SHEET

According to trends the pet health category has shown immense growth, potential, and has mirrored trends similar to the human personal wellness space. Furthermore, according to a 2018 study, sales of GMO-free pet food rose 28.8% as compared to the previous year.¹ Trends in clean labels, recognizable ingredients, functional benefits, and layers of transparency to help make informed decisions no longer lie solely in the human wellness space, as many seek the same for their pets. In addition to the growing trend for clean labels, the number of pet owners around the world continues to increase and a shift in perspective of the animal's role in the family has brought additional awareness to the category. As these trends continue, formulators look to meet the growing demand and provide innovative, animal friendly, sustainable, pet health solutions for a variety of animal species, applications, and deliverability forms.

According to research conducted by Banfield Pet Hospital, a growing population of pets, namely cats and dogs, are experiencing joint pain.² The natural supplement market has opportunity to meet those needs, and a variety of botanical ingredients are well poised to support the joint health segment.

Boswellia serrata, for example, is growing in popularity as it offers opportunity for healthy joint benefits and a balanced inflammatory response supporting aging and active animals. In-vitro and Clinical research (human studies) on Verdure's *Boswellia serrata* extract, have shown support for joint function, healthy inflammatory responses, healthy joint aging, and improved joint integrity.³⁻⁶



Product Advantages

- ✓ **Standardised to six major boswellic acids**
Targets 5-lipoxygenase
- ✓ **Readily absorbed 11-keto boswellic acid (KBA)**
- ✓ **Animal friendly**
100% natural and plant based ingredient
- ✓ **Supports animal health and nutrition in many areas**
Healthy inflammatory response, joint health, joint comfort, mobility and motor function
- ✓ **NASC preferred supplier in USA**
- ✓ **Excellent safety profile and traditional use**
- ✓ **Full traceability and sustainability**

Research

CANINE JOINT HEALTH

Researchers examined 400mg/10kg/bw *Boswellia serrata* extract with regular food once daily for six weeks in 29 dogs with chronic joint and spinal manifestations. After two weeks, researchers noted that 71% the dogs showed improvements. A statistically significant improvement in mobility and comfort were reported after 6 weeks.⁷ *Boswellia* was found to be safe, efficacious, and well tolerated.

82% of participating owners categorized the palatability of *Boswellia serrata* as 'good' for their animals. The data presented indicated that a standardized *Boswellia* resin extract with well documented quality and stability can be recommended as a safe herbal dietary supplement for dogs, providing symptomatic relief in joint mobility and joint comfort.⁷

EQUINE JOINT HEALTH

For horses, *Boswellia* is primarily used to maintain healthy joints, helping to keep movements smooth and comfortable. It has also been found to aid in digestion and support respiratory health; and *boswellia* can also be beneficial for horses with laminitis.

Researchers examined *Boswellia serrata* extract in combination with curcumin, CoQ-10, glycine propionyl-L-carnitine HCL, and D-ribose in 25 young thoroughbred racehorses (2 years old) during training with licensed trainers at 1.2g twice daily.

"There was an intensity-dependent effect of exercise on lactate, malondialdehyde, and pro-inflammatory cytokine gene expression. Although training itself was associated with an overall reduction in inflammatory markers, horses receiving the supplement exhibited further reductions in their indicators of inflammation. As such, this study provides novel evidence of nutritional supplementation reducing post exercise inflammation."⁸ Therefore, WokVel® may support joint health and comfort in horses.



INFLAMMATION

A 2014 study found that WokVel[®] dose-dependently inhibited mRNA expression of COX-2, TNF-alpha, and 5-lipoxygenase (5-LOX) in vitro, suggesting that the effects of WokVel[®] extend beyond the well-known 5-LOX inhibition activity of boswellia. Additionally, cartilage collagen and collagenase enzymes, both key mechanisms for joint integrity, were improved. WokVel[®], administered in gavage for 35-days at 50mg/kg, 100mg/kg, & 200mg/kg, significantly mediated joint discomfort with a dose of 200mg/kg most effectively inhibiting cartilage degeneration.⁶

Manufacturing Process

WokVel[®] Pets is manufactured in a vertically integrated, botanicals-only manufacturing facility audited for Good Manufacturing Practices (GMP) by third-party auditing agencies, like NSF International.

Product Safety

A repeated oral dose toxicity study (2021) of WokVel[®] was conducted on male and female wistar rats according to the OECD guidelines. Based on the results of this study, the no observed adverse effect level (NOAEL) of WokVel[®] when administered orally for 90 days is the highest dose tested 600mg/kg body weight [pending publication].

Product Range

Ingredient	Active Content	Grade	Mesh Size
WokVel Pets	39%-45% Boswellic Acids	Powder	NLT 80% thru 80 mesh

Product Applications

WokVel[®] Pets can be incorporated into dry mixes, wet foods, supplements, chews and treats.

Product Dosage

- Canine/Feline 40-600mg/kg/bw (body weight)
- Equine 1.2-2.4g/day
- NOAEL (No observed adverse effect level) - 600mg/kg/bw (body weight)

About



With headquarters in Noblesville, IN, USA, Verdure Sciences[®] is a supplier of plant-based, botanical ingredients with an emphasis on intrinsic synergies and clinically backed, tangible health applications. WokVel[®] Pets is a registered trademark of Verdure Sciences, Inc.

References

1. (2019 May). Sales growth among pet food products without certain ingredients US in 2018. Statista: Consumer Goods & FMCG. Retrieved March 2020 from <https://www.statista.com/statistics/869627/clean-label-pet-food-sales-growth-by-product-label-claim-us/>
2. Today's Veterinary Practice. OA: When age is not to blame. Banfield Pet Hospital. Retrieved September 2019.
3. Sontakke S et al. Indian J Pharmacol. 2007 Feb. 39(1): 27-29.
4. Kimmatkar N et al. Phytomedicine. 2003. 10: 3-7.
5. Sharma S et al. Phytomedicine. 2004 Feb. 11: 255-260.
6. Nam DE et al. Effect of Boswellia serrata extract on degenerative OA in in-vitro and in-vivo models. J Korean Food Sci Nutr. 02 Apr 2014. 43(5). doi: 10.3746/jkfn.2014.43.5.000
7. Reichling J et al. Dietary support with Boswellia resin in canine inflammatory joint and spinal disease. Originalarbeit. Feb 2004. 146(2): 71-79. doi: 10.1024/0036-7281.146.02.071
8. Horohov DW et al. The effect of exercise and nutritional supplementation on pro-inflammatory cytokine expression in young racehorses during training. J Equine Vet Sci. 08 May 2012. 32(2012): 805-815. doi: 10.1016/j.jevs.2012.03.017