



VET EXPERT

BASED ON EVIDENCE

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ArthroVet HA Complex Large Breed



ArthroVet HA Small Breed and Cats



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Active substances

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graph TD; A[Active substances] --> B[Chondro-protective]; A --> C[Anti-Inflammatory]; B --> B1[- Glucosamine]; B --> B2[- Chondroitin]; B --> B3[- Hialuronic acid]; B --> B4[- Keratan]; B --> B5[- Collagen]; C --> C1[- ASU]; C --> C2[- Boswellia]; C --> C3[- Harpagophytum procumbens]; C --> C4[- N-3 fatty acids];
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Chondro-protective

- Glucosamine
- Chondroitin
- Hialuronic acid
- Keratan
- Collagen

Anti-Inflammatory

- ASU
- Boswellia
- Harpagophytum procumbens
- N-3 fatty acids

ArthroVet HA Complex

❖ Indication:

The product for dogs and cats to Supports healthy joints and cartilage , Ideal for seniors to maintain mobility, for growing pets to optimize joint development and to protect joints, tendons, and ligaments under stress.

❖ Content ArthroVet HA Complex:

glucosamine, chondroitin, hyaluronic acid, vitamin C, Extracts of *Harpagophytum procubens*, avocado and soya bean, L-carnitin, manganese, zinc.

Glucosamine :The precursor of glycosaminoglycans (GAG) in extracellular matrix of cartilages.

Stimulates synthesis of proteoglycans and collagen Inhibits collagenase activity.

At present standard ingredient in the nutrition of humans and animals with joint problems

NSAIDs could inhibit the early steps of endogenous glucosamine synthesis and decrease its amounts.

Absorption :

- 87% of given dose (other sources 72%) during 2 hours after administration
- binds with plasma proteins
- present in the plasma proteins even for few days

Metabolism :

- Liver – glycosaminoglycans synthesis - Chondrocytes

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Chondroitin

Chondroitin sulfate is a main glycosaminoglycan occurring in extracellular matrix of joint cartilages.

Mechanism of action (in osteoarthritis):

- Decreased interleukin-1 production
- Inhibition of complement activation
- Inhibition of matrix metalloproteinases activity
- Stimulation of glycosaminoglycans and collagen synthesis.

Absorption:

- Low molecular weight chondroitin sulfate is absorbed (till two hours after administration)

Hyaluronic acid

- Effectively decreases pain and improves quality of life.

ArthroVet – Why works so good?

- GLUCOSAMINE / CHONDROITIN / HYALURONIC ACID
- Glucosamine stimulates the glucosaminoglycans being a part of cartilage extracellular matrix synthesis
- Chondroitin and hyaluronic acid increase water content within articular cartilages. Thanks to this the cartilages are more elastic, flexible, injury-resistant and better bear the animal bodyweight during ambulation.
- High-molecular weight hyaluronate added to glucosamine and chondroitin led to significantly larger improvements in parameters of joint health and quality of life than the combination of glucosamine and chondroitin sulphate over an eight week period. (Bucci et al., 2005)

SOYA and AVOCADO UNSAPONIFICABLES :

- reduce the development of early osteoarthritic cartilage and subchondral bone lesions in the anterior cruciate ligament dog model of osteoarthritis.
- inhibition of inducible nitric oxide synthase and MMP-13, which are key mediators of the structural changes that take place in osteoarthritis

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SOYA and AVOCADO UNSAPONIFICABLES (ASU)

Mechanism of action :

- In vitro exerts anabolic, anti-catabolic and anti-inflammatory activity in chondrocytes.
- Increases collagen synthesis
- Inhibits interleukin-1beta - induced collagenase
- Increases aggrecan synthesis
- Inhibits IL1 β -dependent activation do matrix metalloproteinase-3 (MMP)-3, IL-6, IL-8 and prostaglandin E2 (PGE2)

Devil's claw (*Harpagophytum procumbens*) :

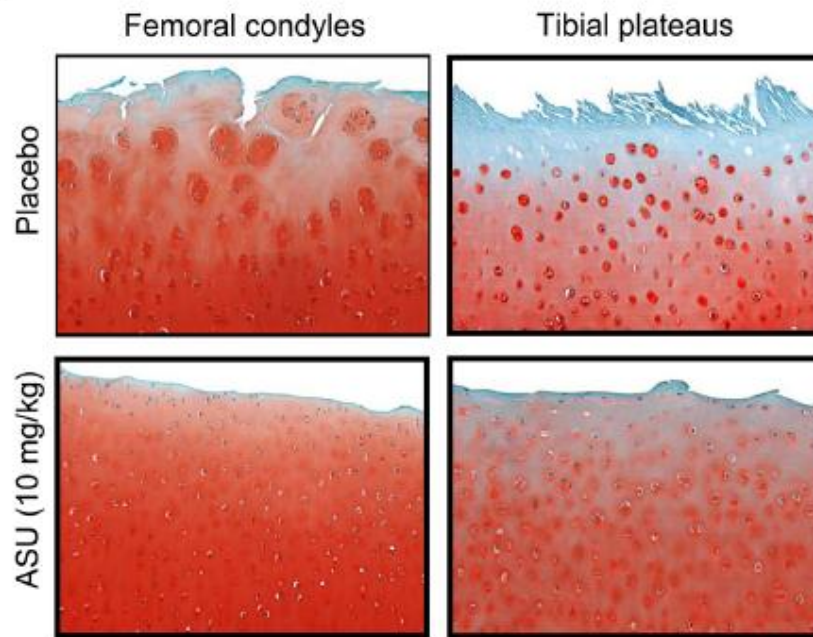
- Is thought to have anti-inflammatory effects, possibly because of inhibition of COX and lipoxygenase; however, it appears to inhibit COX-2, but not COX-1 (Gregory et al., 2008).
- In humans effectiveness comparable to diclofenac.



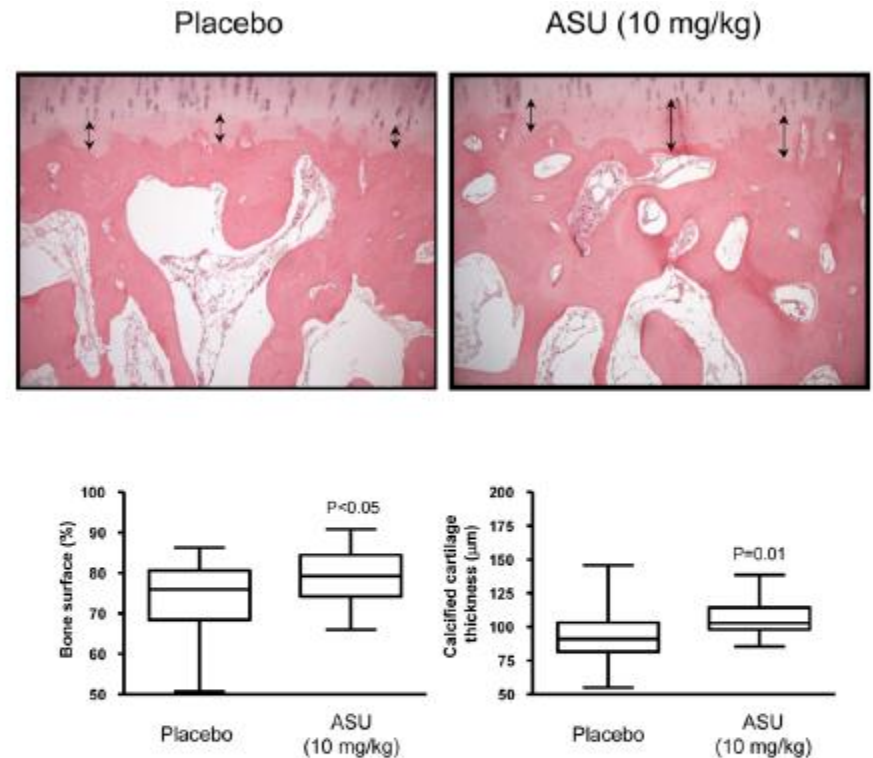
ASU in experimental osteoarthritis in dogs

Available online <http://arthritis-research.com/content/11/2/R41>

Figure 2



Histology of osteoarthritic articular cartilage from the femoral condyles and tibial plateaus. Representative sections of placebo-treated and ASU-treated dogs 8 weeks post-surgery (original magnification $\times 100$). Sections were stained with Safranin-O. ASU, avocado/soybean unsaponifiables.



Subchondral bone and calcified cartilage. Representative sections and data of placebo-treated and ASU-treated dogs 8 weeks post-surgery (original magnification $\times 100$). Sections were stained with haematoxylin/eosin. Data for bone volume and calcified cartilage thickness are represented as box plot and were analyzed using Student's unpaired *t*-test. $P \leq 0.05$ is considered significant. ASU, avocado/soybean unsaponifiables.

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ArthroVet – Why works so good?

- Ascorbic acid (vitamin C) serves as a cofactor for prolyl and lysyl hydroxylases, enzymes crucial in collagen synthesis. In vitro, ascorbate and ascorbic acid increased protein and proteoglycan synthesis by articular chondrocytes (Ameye and Chee, 2006).
- Manganese is the referred cofactor of enzymes called glycosyltransferases; these enzymes are required for the synthesis of proteoglycans that are needed for the formation of healthy cartilage and bone (Keen et al. 1999)



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ArthroVet Complex

NUTRITIONAL PURPOSE

- For dogs and cats to support joint functions in case of joint cartilage disorders and *osteoarthritis*

Content:

- Glucosamine, chondroitin, hyaluronic acid, vitamin C, Extracts of *Harpagophytum procubens*, avocado and soya bean, L-carnitin, manganese, zinc

Key benefits:

- Complex composition – many ingredients with different activities
- Both chondroprotective and anti-inflammatory action
- Contains unique ingredients: soya and avocado unsaponifiables and *Harpagophytum procumbens* extract for stronger anti-inflammatory effect
- Contains hyaluronic acid as a specific chondroprotective agent
- Could be used both in older dogs with osteoarthritis and young growing dogs with developmental disorders of joints and bones
- Anti-inflammatory activity without use of glucocorticosteroids and non-steroidal anti-inflammatory drugs
- Product produced in factory fulfilling Good Manufacturing Practice requirements – the highest quality standards in pharmacy

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