Shark Cartilage

Name of Supplement

Shark Cartilage

Scientific and Common Names

AE-941 (Neovastat®) 1-2,6-8, Benefin®1, Chondroitin 3-4, Chondroitin Sulfate 3-4, Carticin4, Cartilade 4, MSSI-1256F1-2, Shark Cartilage Extract 1-2, Shark Cartilage Powder 1-2, and Squalus acanthias 2.

Description of Active Ingredients

Chondroitin sulfate is the major glycosaminoglycan in shark cartilage 1-3.

Mechanism of Action

Shark cartilage may exert antiangiogenic actions by suppressing new blood vessel growth required for tumor proliferation 1-3,5-8. Clinical studies with AE-941 (Neovastat®) suggested that shark cartilage targets multiple steps in tumor neovascularization through mechanisms such as inhibiting metalloproteinase activities 1,6,7, and competing with vascular endothelial growth factor 6,7. The antiangiogenic activities of shark cartilage may also treat plaque psoriasis by counteracting the actions of angiogenic cytokine interleukin 8 (IL-8) 8. An unclear, but similar antiangiogenic actions may be involved in treating Kaposi Sarcoma 9.

Current Indications and Efficacy

Shark cartilage is currently a dietary supplement in the United States under the Dietary Supplement Health and Education Act of 1994 3.

Cancer

A relationship between dose and survival was observed in a phase II multi-center, open-label, open-ended treatment study on AE-941 (Neovastat®) in patients with refractory renal cell carcinoma; patients treated with Neovastat 240 ml/day orally twice daily had higher median survival time (16.3 months) when compared with patients taking 60ml/day orally twice daily (7.1 months) 6.

Shark cartilage is not beneficial in people with advanced breast, colorectal, lung, prostate, non-Hodgkin lymphoma, and brain cancer 5.

The antiangiogenic effect of shark cartilage is currently under investigation with FDA approval by two randomized phase III trials of AE-941/Neovastat® in patients with unresectable stage IIIA or IIIB non-small cell lung cancer and renal cell carcinoma 3,10.

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Psoriasis
Oral preparation of AE-941 (Neovastat®) containing water-soluble shark cartilage extract in a single-center, randomized, open-label, phase I/II trial found AE-941 (Neovastat®) to improve the Psoriasis Area and Severity Index (PASI) in 50%, 41.7%, and 30.8% of 49 patients with psoriasis receiving 240, 120, and 60 ml/day AE-941 (Neovastat®) respectively. The severity of itching decreased as dose increased in more than 87.5% of patients. Physician’s global assessment of patients’ response to AE-941 (Neovastat®) treatment also improved in 33% of patients receiving 30ml/day and greater than 60% in patients receiving 60, 120, and 240ml/day of AE-941 (Neovastat®).

Kaposi Sarcoma (KS)
Oral preparations of shark cartilage given 3750 mg divided 2 times a day initially for 3 months and then 4500mg divided 3 times a day for 18 months was found effective in reducing KS lesion size, color, and small vessels in a 45-year-old human immunodeficiency virus-seronegative white man who was positive for human herpes virus 8 (HHV-8). No actual numbers or percentages reported.

Other
Insufficient data is available for arthritis, wound healing, enteritis, and diabetic retinopathy.

Contraindications/Allergies

Pediatrics:
Shark cartilage is contraindicated for pediatric use.

Hypercalcemia:
Avoid use in hypercalcemia.

Hypersensitivity:
Do not use in hypersensitivity to shark cartilage or chondroitin sulfate.

Pregnancy and lactation:
Avoid using in pregnancy and lactation (insufficient data available).

Dosage Forms, Recommended Doses, Duration

Extract
For refractory metastatic renal cell carcinoma: oral 60 to 240 milliliters per day of AE-941 (Neovastat®). For psoriasis: 60, 120, and 240ml/day of AE-941 (Neovastat®) for 12 weeks.

Capsule
As an antineoplastic: 80 to 100 grams per day; for psoriasis: 0.4-0.5g per kilogram daily for four weeks, then 0.2-0.3 grams per kilogram for another four weeks; for Kaposi’s
sarcoma: 100 grams per day\(^3\), or 3750 mg divided 2 times a day initially for 3 months and then 4500mg divided 3 times a day for 18 months\(^9\).

_Powder_
As an antineoplastic: 1 to 2.5 grams per kilogram divided into 2 to 3 doses and mixed with 4-6 ounces one hour before meals\(^10\).

Note: Commercial products generally recommend 500 milligrams to 4.5 grams in 2 to 6 divided doses daily\(^2\).

**Drug Interactions and Drug-Disease Interactions**

_Hypercalcemia:_
Concurrent use of shark cartilage and calcium may cause or exacerbate hypercalcemia\(^2\). Mechanism of interaction is unclear, but the high level of calcium in shark cartilage may contribute to the development of hypercalcemia.

_Fruit Juice:_
Acidic fruit juices can decrease shark cartilage potency over time\(^2\). No mechanism reported.

**Other Safety Issues**

Shark cartilage has been safe to use orally for more than 21 months\(^6\). Insufficient data is available for other uses.

**References**


11. Lu C, University of Texas - MD Anderson Cancer Center: Phase III Randomized Study of Induction Platinum-Based Chemotherapy and Radiotherapy With or Without AE-941 (Neovastat) in Patients With Unresectable Stage IIIA or IIIB Non-Small Cell Lung Cancer, MDA-ID-99303, Clinical trial, Active.