NEM® SAP

Science-based joint support

Natural eggshell membrane (NEM®) is the thin membrane that forms the inner lining of hen eggshells. It contains many ingredients that are known to help support joint health, including collagen, glucosamine, hyaluronic acid, glycosaminoglycans, and chondroitin sulfate, as well as several other proteins and peptides.[1] Studies have demonstrated that NEM® can improve symptoms of pain and stiffness associated with osteoarthritis within 7–10 days of starting supplementation.[1] **NEM® SAP** combines NEM® with the botanical *Boswellia serrata* (frankincense) to optimize its positive effects on reducing pain and inflammation. **NEM® SAP** provides a safe and effective treatment for pain and stiffness associated with osteoarthritis as well as other inflammatory processes.

ACTIVE INGREDIENTS

Each vegetable capsule contains:

Partially hydrolyzed chicken eggshell membrane (NEM®)	500 mg
Boswellia serrata, 70% organic acids, 35% boswellic acid	135 mg

May contain traces of sucrose and yeast (less than 5 parts per thousand).

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, dairy, citrus, preservatives, artificial flavour or colour, or starch.

NEM® SAP contains 30 capsules per bottle

DIRECTIONS FOR USE

Adults: Take 1 capsule daily with food or as directed by your healthcare practitioner. Consult a healthcare practitioner for use beyond 8 weeks.

INDICATIONS

NEM® SAP may help:

- Relieve joint pain associated with osteoarthritis.
- In improving stiffness and range of motion in joints.
- Reduce TNF-α production, supporting a healthy inflammatory response.

SAFETY

NEM® has generally recognized as safe (GRAS) status and has been demonstrated to be safe at up to 50 times the human dose of 500 mg/d.[2] No adverse reactions have been reported.[1] No known interactions with other supplements or pharmaceuticals.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **NEM® SAP** lot numbers have been tested by a third-party laboratory for identity, potency, and purity.

NEM® is a registered trademark of ESM Technologies, LLC.

Scientific Advisory Panel (SAP): adding nutraceutical research to achieve optimum health

NFH®

351, Rue Joseph-Carrier, Vaudreuil-Dorion, Quebec, J7V 5V5
T 1 866 510 3123 • F 1 866 510 3130 • nfh.ca

For healthcare professional use only.

Natural eggshell membrane (NEM®) is a natural-sourced supplement that is derived from hen eggshell membrane. It contains naturally occurring glycosaminoglycans (GAGs), glucosamine, chondroitin, hyaluronic acid, and proteins, that are useful for maintaining healthy articular cartilage and surrounding synovium and connective tissue.[1, 3] NEM® is a viable safe alternative treatment of pain and stiffness associated with osteoarthritis or joint degeneration. **NEM® SAP** contains both NEM® and *Boswellia serrata* to maximize the anti-inflammatory properties of this product and to provide maximum benefit to patients.

NEM® FOR JOINT AND CONNECTIVE TISSUE DISORDERS

In two open-label human clinical trials, patients with a variety of joint and connective tissue disorders, including knees, hips, shoulders, elbows, neck, or back, were given 500 mg NEM® for one month.[1] Patients were assessed for either general pain (both studies) or range of motion and general pain (one study) at 7 days and 30 days.[1] These studies found that 33% of patients experienced >30% pain reduction at 7 days and 66% of patients experienced a >50% reduction in pain at 30 days.[1] Both these studies had a small number of participants and tested a variety of different joint pathologies, which may explain some of the variation in study outcomes.

In a double-blind, placebo-controlled study, 67 participants with osteoarthritis of knee received either 500 mg NEM® or placebo for 8 weeks.[3] Participants were evaluated based on the Western Ontario and MacMaster (WOMAC) osteoarthritis scale, as well as pain, stiffness, and functional WOMAC subscales, at days 10, 30 and 60.[3] At 10 days, there was an average reduction in pain of 15.9% and an average improvement of stiffness of 12.8%. By day 60, there was an absolute rate of response that was found to be statistically significant of 26.6% in both pain and stiffness.[3] Researchers concluded that NEM® is safe and effective for treating pain and stiffness associated with osteoarthritis of the knee.[3]

NEM® INFLAMMATORY PROPERTIES

In a study exploring the potential mechanism of action of NEM®, researchers exposed human immune cells to different mitogens known to elicit an inflammatory response.[4] Cells pre-treated with a water extract of NEM® were found to significantly reduce serum TNF-α after exposure to phytohemagglutinin (PHA).[6]

Researchers in this study also looked at the effect of human digestion on NEM® efficacy. NEM® was exposed to a pre-treatment that simulated gastrointestinal digestion, and then used to treat the immune cells prior to exposure to pokeweed mitogen (PWM). PWM is a mitogen which induces a more extensive immune response than PHA by including T cells, B cells, and monocytes.[4] The serum level of TNF-α was significantly reduced with pre-treated NEM® compared to when cells were exposed to PWM alone. These results indicate that NEM® does not appear to be negatively impacted by digestive enzymes, and that NEM® appears to have a positive effect on immunomodulation.[4]

BOSWELLIA (*Boswellia serrata*)

Boswellia (*Boswellia serrata*) has been used historically in Ayurvedic medicine for the treatment of chronic inflammatory conditions.[5, 6] The resinous part of boswellia contains monoterpenes, diterpenes, triterpenes, tetracyclic triterpenic acids, and four major pentacyclic triterpenic acids.[6] Primary efficacy for the treatment of pain and inflammation with boswellia is attributed to the boswellic acids, which are selective and potent inhibitors of 5-lipoxygenase (LOX), an enzyme responsible for inflammation.[5, 6] Historically, the common preparations of boswellia may contain minimal or varying boswellic acid content. **NEM® SAP** contains boswellia extract standardized to 70% boswellic acids.

REFERENCES

1. Ruff, K.J., et al. "Eggshell membrane: a possible new natural therapeutic for joint and connective tissue disorders. Results from two open-label human clinical studies." *Clinical Interventions in Aging* Vol. 4 (2009): 235–240.
2. Ruff, K.J., et al. "Safety evaluation of a natural eggshell membrane-derived product." *Food and Chemical Toxicology* Vol. 50, No. 3–4 (2012): 604–611.
3. Ruff, K.J., et al. "Eggshell membrane in the treatment of pain and stiffness from osteoarthritis of the knee: A randomized multicenter, double-blind, placebo-controlled clinical study." *Clinical Rheumatology* Vol. 28, No. 8 (2009): 907–914.
4. Benson, K.F., K.F. Ruff, and G.S. Jensen. "Effects of natural eggshell membrane (NEM) on cytokine production in cultures of peripheral blood mononuclear cells: Increased suppression of TNF-α levels after in vitro digestion." *Journal of Medicinal Food* Vol. 15, No. 4 (2012): 360–368.
5. Wallace, J.M. "Nutiritional and botanical modulation of the inflammatory cascade — eicosanoids, cyclooxygenases, and lipoxygenases — as an adjunct in cancer therapy." *Integrative Cancer Therapies* Vol. 1, No. 1 (2002): 7–37.
6. Siddiqui, M.Z. "*Boswellia serrata*, a potential antiinflammatory agent: an overview." *Indian Journal of Pharmaceutical Sciences* Vol. 73, No. 3 (2011): 255–261.