

How to support joint health with botanicals and nutrients such as willow bark, ginger, boswellia, methylsulfonyl methane (MSM) and Hyaluronic acid (HA)



I've been availing myself of some of Protocol for Life Balance's joint and muscle support supplements now that the cooler weather is enabling longer run and bike workouts. They're really helping me with recovery as my mileage piles up. Here's a deep dive on how they might help you . . .

—Dr. Ronald Hoffman

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As we age, the maintenance of joint health is dependent on many factors that are anatomical, functional, and biological in nature. From an anatomical standpoint, individual joint morphology and extra weight can be responsible for pressure points within the joint that can erode cartilage tissue over time and create friction zones that will necessitate repair to maintain the functional health of the joint. Some of

the functional factors that may be responsible for premature joint aging are poor muscle function and joint overuse. As for biological factors, the combination of anatomical and functional joint issues may result in creating an unfavorable environment that translates into the generation of biological stress inside joints. Supplementing the diet with appropriate nutrients and botanicals can help support normal joint health by contributing to normal joint tissue healing and by supporting a normal response to biological stress.*

Botanicals can be used to support healthy joint function.* Many botanicals have been studied for their joint support properties, we will focus here on three: willow bark, ginger root, and *Boswellia serrata*.

Willow bark extracts have been used for centuries to modulate the immune system response to pain and injury related to overexertion.* Its main bioactive constituent, salicin, is metabolized in the body into acetylsalicylic acid.* When the immune system is triggered, active constituents of willow bark extracts have been shown to regulate the normal balance of key immune mediators that could contribute to its analgesic effect.* Clinical studies confirm that willow bark extracts can help to alleviate minor aches and pains associated with overexertion.*^{1,2}

Ginger root is another traditional herb with many applications. It is usually thought of in the context of relief from occasional nausea, but it has also been used for centuries by herbalists for its pain-relieving effects.* Ginger possesses numerous active constituents, including gingerols, shogaols, and many other bioactive compounds including volatile oils. Research indicates that the pain-relieving effects of ginger are likely to be related to the inhibitory effect of 6-shogaol on the release of substance P.* Substance P is associated with normal immune responses to bodily stress and pain perception.* Ginger influences a number of aspects of the immune response to biological stress. Gingerols and shogaols are known to regulate the normal balance of key immune mediators released when the immune system is triggered.* In addition, human and laboratory research indicate that ginger may inhibit many other biological pathways that are activated when the immune system is triggered.* Clinical evidence demonstrates that ginger root and ginger extracts are effective relievers of pain due to overstress or exertion, as well as for occasional pain related to typical menstrual cycles.*^{3,4}

Boswellia serrata is a botanical commonly used in Ayurveda for minor aches and pain.* The main bioactive constituents of boswellia are boswellic acids. *Boswellia serrata* extracts are often standardized to the 3-O-acetyl-11-keto-beta-boswellic acid (AKBA). Boswellic acids, especially AKBA, regulate the normal balance of key immune mediators released when the immune system is triggered.* By helping to support a balanced response to these signals, Boswellic acids, especially AKBA alleviate the pains of overexertion.* Boswellic acids also might help to preserve and maintain healthy joint tissue through its effects on matrix metalloproteinase-3 (MMP-3).* ApresFlex® is a proprietary boswellia extract that has been clinically shown to reduce the minor aches and pains of overexertion in as little as five days after beginning supplementation, while positively influencing joint mobility for up to 90 days.* ApresFlex® has efficacy at a relatively low dosage – only 50 mg twice daily – which makes this ingredient ideal for a supplement.*⁵⁻⁷

Among the nutrients that may contribute to healthy joints, methylsulfonyl methane (MSM), a natural form of bioavailable sulfur found in all living organisms, is critical for the formation of collagen and elastin, which are proteins that are important to normal joint structure.* Furthermore, sulfur is necessary for glutathione, lipoic acid, and s-adenosyl methionine (SAM-e) production.* MSM is also important for the support of normal immune response to biological stress.* Data from

randomized clinical trials suggest that supplementing the diet with a minimum of three grams MSM daily may help to maintain healthy joint tissue.*^{8,9}

Hyaluronic acid (HA) is also a nutrient that may contribute to healthy joints.* It is a naturally occurring glycosaminoglycan (large molecule made of D-glucuronic acid and D-N-acetylglucosamine) that can be found in every tissue of the body. HA is particularly concentrated in the eyes, skin and joint fluid, where it functions as one of the body's main lubricating components.* In joints, it helps to create a viscous environment, cushion and maintain normal joint function.* HA also plays a critical role in the formation of cartilage, the main tissue that makes up joints. While it is a long molecule that was initially thought to be unabsorbed in the digestive tract, some more recent studies that it is slowly and steadily absorbed and can reach joint tissue. Data from randomized clinical trials suggest that supplementing the diet with 80 mg HA daily may help to maintain healthy joint function.*^{10,11}

Protocol For Life Balance[®], a brand of affordable high-quality dietary supplements offering a wide range of joint support supplements, including stand-alone **MSM** and **Hyaluronic acid**.* Furthermore, Protocol For Life Balance[®] has recently launched a unique botanical formula, **Ache Action**[™], including standardized extracts of willow bark (minimum 14% salicin), ginger root (minimum 5% gingerols), and *Boswellia serrata* as ApresFlex[®] (10 mg AKBA), specifically formulated to alleviate normal pain due to overexertion by acting broadly on different pathways involved when the immune system is triggered.* Consulting a healthcare professional for a customized joint support program is recommended to optimize joint health and get rid of annoying occasional minor aches and pains due to overexertion.*

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* These statements have not been evaluated by the Food and Drug Administration.

These products are not intended to diagnose, treat, cure, or prevent any disease.