

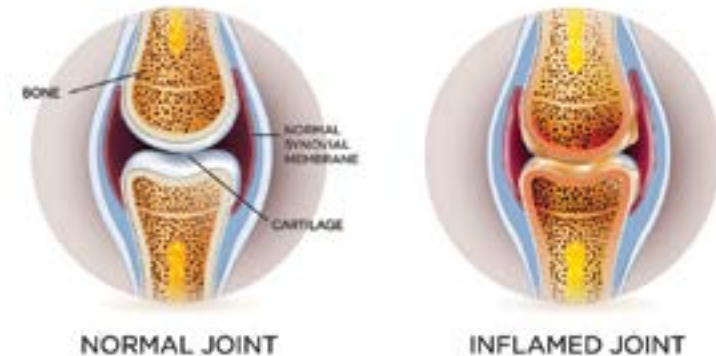


# 1.3 MILLION AMERICAN ADULTS EXPERIENCE AUTO-IMMUNE INFLAMMATION

Inflammation is often caused by an imbalance in the immune messenger molecules, causing inadequate, natural anti-inflammatory mechanisms. Evidence has shown that there is a relationship between the gastrointestinal microbiota, the mucosal and systemic immune responses, in addition to the development of joint soreness and stiffness.<sup>1</sup> In auto-immune joint stiffness, the body's immune system starts attacking its own tissue, specifically the synovial membrane, which is the membrane that surrounds and holds the joint tissues together.<sup>1</sup>

Once the synovial membrane is weakened, deterioration of the surrounding cartilage, connective tissue, bone and ligament tissues begin to occur.<sup>1</sup> This deterioration can affect joints of the knees, hips, hands, shoulders and arms. This causes soreness, stiffness, lack of mobility and mild to moderate pain. When this occurs, the term "inflammation" is used. Specific biochemicals appear in the blood during inflammatory responses, which medical scientists can detect. These are called "markers" for the specific condition. There are specific biochemical markers for auto-immune inflammatory joint stiffness and soreness that appear in the blood when strong auto-immune responses occur.<sup>1</sup> These can be measured in a blood test. A food or dietary supplement taken for a period of time may lower the level of inflammatory markers, indicating the inflammation is subsiding and the soreness and stiffness may become reduced.

## JOINT SORENESS CAUSED BY INFLAMMATION



## THE LINK BETWEEN GUT MICROFLORA AND INFLAMMATION

Auto-immune inflammation in an individual can lead to substantial disability and compromise their quality of life. Strategies that aim to normalize the gut microflora in order to maintain proper gastrointestinal and immune system function may downregulate the abnormal inflammatory response and help to alleviate symptoms of joint soreness and immobility.<sup>1</sup>

Probiotics have been considered an approach to addressing the consequences of different inflammatory conditions. The spore-forming probiotic strain *Bacillus coagulans* has demonstrated anti-inflammatory and immunomodulating effects in both animals and humans.<sup>1</sup> Also, the prebiotic fiber inulin—which can be found in artichoke—has been discovered to positively affect the immune system. Prebiotics, such as inulin, are starches that travel all the way through the stomach and digestive tract without being digested. However, when these “prebiotics” reach the colon, certain beneficial microbes finally digest and use them as fuel. These starches now provide a selective food for beneficial microbes, increasing their colonization and support for good colon health.<sup>2</sup> This is why they are termed “prebiotics,” meaning they are not probiotics, but will help stimulate certain microbes by providing a selective fuel for them.



## PROBIOTIC SUPPLEMENTATION REDUCED PAIN AND INCREASED DAILY ACTIVITIES

A clinical study of 45 men and women who had joint stiffness and pain for one year were recruited and randomly assigned to receive a *Bacillus coagulans* probiotic supplement or placebo once a day for 60 days. The subjects were primarily female (81 percent) between the ages of 36 and 82 years old. The majority of subjects were taking their regular medication for joint soreness and continued taking them during the course of the study.<sup>1</sup>

The results of the study after 60 days of supplementing with the probiotic *Bacillus coagulans* showed the group to have significant improvement in pain scores and a reduction in the biochemical marker for joint stiffness. The subjects also reported greater improvement in the ability to walk two miles, reach for items, and participate in daily activities.<sup>1</sup>

## INFLAMMATORY JOINT SORENESS SYMPTOMS:

- Joint soreness and stiffness occurs when your immune system attacks the lining of the membranes that surround your joints, known as the synovium.
- The resulting inflammation thickens the synovium, which can eventually damage the cartilage and bone within the joint.
- The tendons and ligaments holding the joint together begin to weaken and stretch. The joint loses its shape and alignment.
- Certain genetic predispositions may make you more susceptible to environmental factors (including viruses and bacteria), which may trigger joint stiffness.

## DIGESTIVE+++ FOR YOUR JOINT HEALTH

DIGESTIVE+++ is a dietary supplement that contains *Bacillus coagulans*, which has been shown to support anti-inflammatory responses towards joint soreness and stiffness. Several studies are indicating the benefit of using probiotics and prebiotics to help keep joints in a healthier state with less discomfort, less inflammation and more mobility.<sup>1,2</sup> DIGESTIVE+++ also contains a full array of digestive enzymes that help digest foods and nutrients for their optimal assimilation and absorption. The selective prebiotics in DIGESTIVE+++ help feed the optimal microbes that inhabit the colon, supporting the colonization of the best gut microbes for colon health.

## WHO IS AT RISK FOR JOINT SORENESS/STIFFNESS?

- Women are more likely than men to develop this condition.
- Joint soreness can occur at any age, but most commonly begins between the ages of 40 and 60.
- If a member of your family has had these conditions, you may have an increased risk of the same condition.
- Environmental exposures, toxins and smoking may increase the probability for developing joint soreness.
- People who are overweight or obese appear to be at a somewhat higher risk of developing joint soreness.



These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

## REFERENCES

1. Mandel DR1, Eichas K, Holmes J. *Bacillus coagulans*: a viable adjunct therapy for relieving symptoms of rheumatoid arthritis according to a randomized, controlled trial. *BMC Complement Altern Med*. 2010 Jan 12;10:1.
2. Khadijeh Abhari, Seyed Shahram Shekarforoush, Saeid Hosseinzadeh, Saeid Nazifi, Javad Sajedianfard and Mohammad Hadi Eskandari. The effects of orally administered *Bacillus coagulans* and inulin on prevention and progression of rheumatoid arthritis in rats. *Food Nutr Res*. 2016; 60: 10.