



Editorial

Role of bromelain in pineapple for managing autoimmune disorders

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Abstract

Bromelain, a potent enzyme found in pineapples, has been used in traditional medicine for centuries to control autoimmune conditions and improve life. It has unique qualities, such as reducing inflammation and pain in rheumatoid arthritis, reducing gut inflammation in inflammatory bowel diseases like Crohn's disease and ulcerative colitis, and potentially addressing the underlying causes of allergy disorders. Bromelain is taken in through the digestive system and acts as an anti-inflammatory chemical, reducing inflammation and lowering inflammatory cytokines. It is often taken as a dietary supplement, with potential adverse effects. Recent research suggests that bromelain may help with autoimmune disorders, such as coeliac disease, inflammatory arthritis, and inflammatory bowel disease. However, its medical application is complex, and clinical trials are needed to determine its effectiveness, optimal dose, and long-term safety. Researchers are looking into bromelain, an enzyme found in pineapple, to see whether it could be used to treat autoimmune diseases. Bromelain can change how the immune system and inflammatory pathways work, which may lower inflammation and control how immune cells work. Studies show that eating pineapple with much bromelain or taking bromelain supplements could help people with rheumatoid arthritis and inflammatory bowel disease.

Keywords: Bromelain, Pomegranate, Immunity, Autoimmune health, Anti-inflammatory, Antioxidant, Indian Diet

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1. Introduction

Over the years, Indian traditional knowledge systems like Ayurveda, Naturopathy, Yoga, and Nutrition have changed because of different ways of living and habits. These systems are becoming increasingly popular since they have much old and new knowledge, new ideas, and benefits.¹

1.1. Bromelain's role in autoimmune health

People have employed the pineapple, a tropical fruit, for centuries in traditional medicine. Its reputation as a medicine comes from its potent enzyme mix, bromelain, which is good for your health and may help control autoimmune conditions, improving life.

Scientists are looking at bromelain for autoimmune and inflammatory illnesses since it has certain unique qualities. It can help with rheumatoid arthritis symptoms by lowering inflammation and pain around the affected joints. It might

also help with gut inflammation in inflammatory bowel illnesses, including Crohn's disease and ulcerative colitis. Bromelain's ability to change the immune system may help with the underlying cause of several allergy disorders.²⁻³

1.2. Understanding bromelain's mechanism

Bromelain is a natural substance that affects the body's immune and inflammatory systems. It is taken in through the digestive system and affects the body. Bromelain is an anti-inflammatory chemical that stops the body from making pro-inflammatory compounds and lowers the levels of inflammatory cytokines. It works as well as NSAIDs to reduce inflammation but has fewer adverse effects. Bromelain also changes the immune system to keep it in check and balances it, especially in autoimmune diseases with too strong an immune reaction. It lowers the amount of cytokines made and affects how lymphocytes go to places with inflammation.²⁻⁴

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1.3. Incorporating bromelain into diet

Bromelain is a potent natural substance that can help with inflammation and the immune system. It comes from the stem and fruit of pineapples. Fresh pineapple juice or tablets can provide some bromelain, but not enough to remedy a health problem. In capsules, tablets, or powders, people take bromelain as a dietary supplement. It is usually harmless, although it can have adverse effects, and people allergic to pineapples should stay away from it. Bromelain is suggested as an additional treatment to help with symptoms, including pain and swelling, which could make life better for those with chronic autoimmune illness.⁵

1.4. Recent research and clinical evidence

Researchers have found that bromelain may help with several illnesses, such as coeliac disease, inflammatory arthritis, and inflammatory bowel disease. A study from 2023 discovered that bromelain administration lowered the release of pro-inflammatory cytokines and raised the synthesis of anti-inflammatory cytokines. It has been demonstrated to lower pain and swelling in autoimmune disorders because it can change mediators like bradykinin to make them less painful and inflamed. It also talks about how bromelain might help treat certain diseases.⁶

1.5. Critical analysis and future outlook

Bromelain's medical application is complicated because it boosts and slows T-cell responses. This may depend on the type of autoimmune disease and the patient's immune system. We must undertake clinical trials to determine how effective bromelain is for specific autoimmune conditions, the best dose, and how safe it is in the long run. Because it is bioavailable, it may be absorbed via the gut without losing its biological activity, which can affect the body.⁴⁻⁶

2. Conclusion

Bromelain is a natural substance that may help with autoimmune disorders. It has been found to reduce inflammation and change how the immune system works, but more research is needed. Bromelain's integration into mainstream clinical practice for autoimmune disorders requires standardization, rigorous clinical trials, and its role as an adjuvant therapy. Standardized protocols for dosage and

treatment duration are crucial for consistent results. Large-scale trials are needed for optimal use cases.

3. Source of Funding

None.

4. Conflict of Interest

None.

References

1. Banerjee S. The Essence of Indian Indigenous Knowledge in the perspective of Ayurveda, Nutrition, and Yoga. *Res Rev Biotechnol Biosci.* 2020;7(2):20-27.
2. Rathnavelu V, Alitheen NB, Sohila S, Kanagesan S, Ramesh R. Potential role of bromelain in clinical and therapeutic applications. *Biomed Rep.* 2016;5(3):283-8
3. Mousavi Maleki MS, Ebrahimi kiasari R, Seyed Mousavi SJ. Bromelain-loaded nanocomposites decrease inflammatory and cytotoxicity effects of gliadin on Caco-2 cells and peripheral blood mononuclear cells of celiac patients. *Sci Rep.* 2023;13(1):21180.
4. Pavan R, Jain S, Shraddha, Kumar A. Properties and therapeutic application of bromelain: a review. *Biotechnol Res Int.* 2012;2012:976203.
5. Varilla C, Marcone M, Paiva L, Baptista J. Bromelain, a Group of Pineapple Proteolytic Complex Enzymes (*Ananas comosus*) and Their Possible Therapeutic and Clinical Effects. *A Summ Foods.* 2021;10(10):2249.
6. Pavan R, Jain S, Shraddha, Kumar A. Properties and therapeutic application of bromelain: a review. *Biotechnol Res Int.* 2012;2012:976203.

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