



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Article

Anti-Inflammatory Agents: A Review on Herbs That Reduces Inflammation

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ARTICLE INFO

Published: 03 June 2025

Keywords:

Anti-Inflammatory,
Turmeric, Ginger,
Chamomile, Fenugreek

DOI:

10.5281/zenodo.15584768

ABSTRACT

Medicinal plants are used in the treatment of diseases. Inflammation can encompass a wide range of diseases such as rheumatic and immune-mediated conditions, diabetes, cardiovascular accident, and etc. turmeric, ashwagandha, ginger, chamomile and fenugreek are some of the herbs introduced in this review. The treatment of inflammation is not a one-dimensional remedy since it involves herbal medicine and lifestyle modification.[1].

INTRODUCTION

Inflammation is a defense response of our body to hazardous stimuli such as allergens and/or injury to the tissues, on the other hand, is the main cause of a vast continuum of disorders.[2] We need to apply natural anti-inflammatory factors within medication therapy to achieve increased pharmacological response and the lowest degree of unwanted side effects.[2,3] The pivotal source of herbal medication guidance, but surely modern medicine must prove these guidelines through scientific methods before using them in practice. The most clinical evidence of their anti-inflammatory effects has been assessed in this review.

Inflammation and the Body

Inflammation is an immune system response that heals. It causes some symptoms like redness and swelling, but it's a helpful process. When inflammation becomes chronic, it can cause some symptoms.

Symptoms:

- It is pain in muscles and joints.
- The person has fatigue.
- It was difficult to sleep.
- Depression and anxiety.
- There are Digestive problems.
- There are frequent infections.

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



Inflammation can be found in many chronic conditions, including heart disease, diabetes, arthritis, and Parkinson's disease.[2]

Causes of Inflammation:

Injuries and infections typically cause acute inflammation. Environmental factors, including aspects of your daily life and exposures to toxins, are the culprits behind most cases of chronic inflammation. Common causes include:

- Low levels of physical activity.

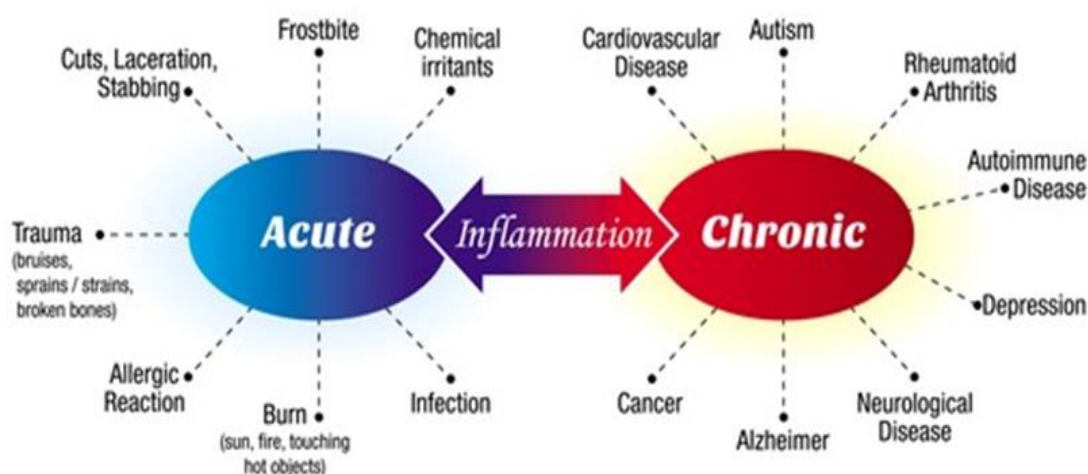
- Chronic stress.
- Having a BMI at or above 30 (obesity), especially when excess weight is deep within your belly (visceral fat).
- An imbalance of healthy and unhealthy microbes in your gut (dysbiosis).
- Regularly eating foods that cause inflammation, such as foods high in trans-fat or salt.
- Disrupted sleep and circadian rhythm.

- Exposure to toxins, including air pollution, hazardous waste and industrial chemicals.
- Using tobacco products.
- Regularly drinking too much alcohol.

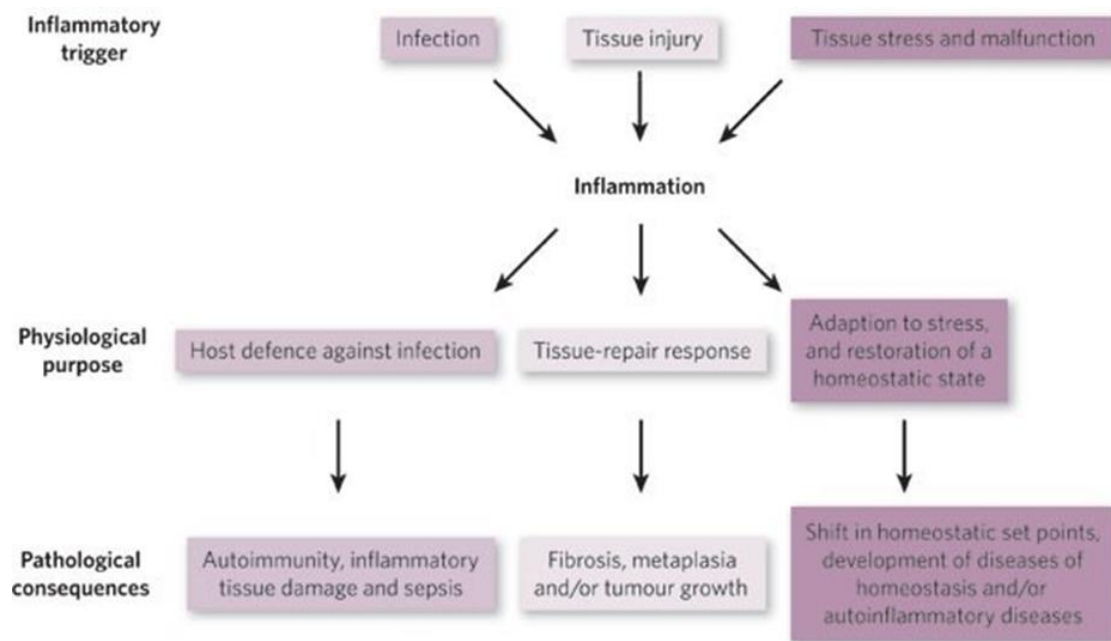
Risk Factors of Inflammation:

- Obesity
- Autoimmune diseases
- Chronic stress
- Depression
- Sleep disorder
- Diet
- Smoking
- Environmental and industrial toxicants
- Age
- Infection
- Excessive alcohol
- Pharmaceutical drug
- Type 2 diabetes
- Physical activity

Types Of Inflammation:



Pathophysiology of Inflammation:



Treatments For Inflammation:

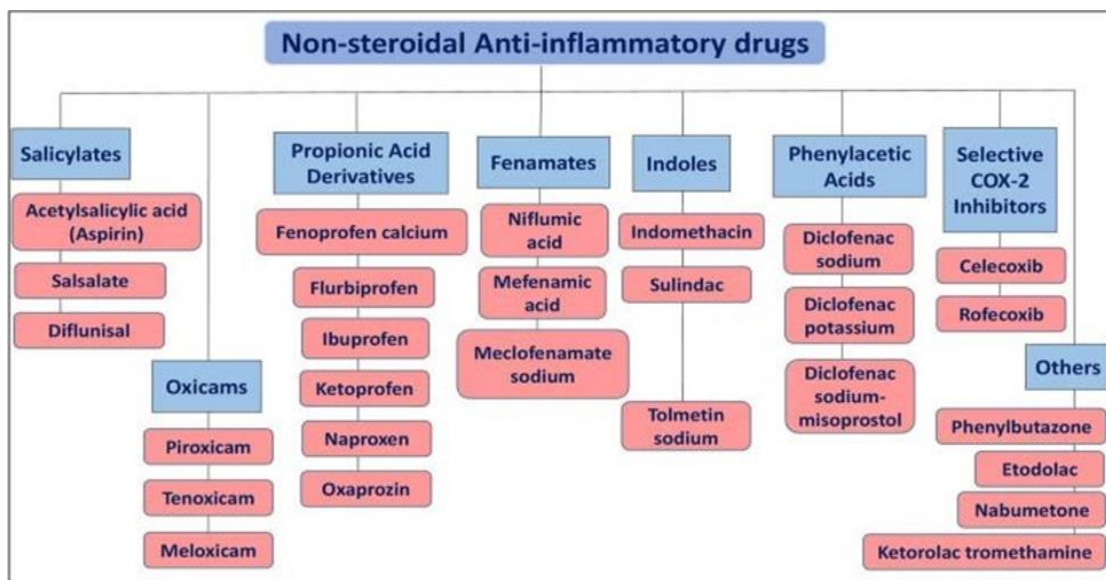


Non –Pharmacological:

Foods that fight inflammation include fruits, green leafy vegetables, tomatoes, nuts and fat fish. Foods that increase inflammation are usually highly processed. Adding herbs and spices to your diet is a good idea. The ingredient scans make your food more delicious.

Pharmacological:

Classification Of Anti-inflammatory Drugs:



Natural Anti-inflammatory Herbs:

Some herbs with anti-inflammatory properties include:

1. Turmeric (*Curcuma longa*)



There is a plant in the ginger family. For its bright yellow colour, Turmeric is a primary ingredient in many curries. It has been used for many purposes. One analysis of clinical trials found that curcumin is helpful in the treatment of arthritis. Curcumin can be used for a long time. Black pepper improves the bioavailability of curcumin up to 2000%, making it more effective in fighting inflammation.[4] turmeric is a natural compound (polyphenol) called curcumin, which has both antioxidant and anti-inflammatory properties. turmeric could be beneficial in doses ranging from 500–2,000 milligrams (mg) per day.

Ashwagandha (*Withania Somnifera*)



Ashwagandha has been shown to help reduce cortisol in the body and fight the negative effects

of stress. By reducing inflammation, ashwagandha helps balance blood sugar levels, ease anxiety, relieve adrenal and boost immune function. Research shows that the herb may help protect against skin inflammation. Ashwagandha is popular for its ability to combat stress and anxiety and is also found in formulas that promote sleep.[8] withaferin A is responsible for inhibiting oxidative and pro-inflammatory chemicals. Ashwagandha has most often been used by adults in doses up to 1000 mg daily, for up to 12 weeks.

Ginger (*Zingiber Officinale*)



Many foods are made with ginger, including drinks, candies, and baked goods. Ginger can be found in super markets in root or ground form. It has been used as an aid to digest in the past. Ginger has many properties with NSAIDs. One study shows ginger affects the pathways. There were five trials involving people with arthritis. The study subjects had a reduction in pain after taking ginger. It is generally safe to drink ginger. It can cause irritation to the mouth and throat in large quantities. There is distress in the stomach.[4] gingerol, a major component of ginger, has been reported to have anti-inflammatory, anti-viral, and anti-tumor actions. Ginger has most often been used by adults in doses of 0.5-3 grams by mouth daily for up to 12 weeks.

Chamomile (*Matricaria Chamomilla*)





It has been used for hundreds of years for its healing properties. In the early settlements of America, doctors used chamomile to reduce pain and inflammation. Studies suggest that it is beneficial for issues like osteoarthritis, gastrointestinal disorders and ulcerative colitis.[8] Pharmacological screening has shown that apigenin, its glycosides, and ferulic acid might be responsible for anti-inflammatory activities. Chamomile has been used as a tea for various conditions and as a topical cream, gel, or oil. Typical oral doses are 1.1 to 15 g/day.

Fenugreek (Trigonella Foenum)



Fenugreek has many health benefits and is one of the best anti-inflammatory herbs. Fenugreek can reduce inflammation of the stomach and has been shown to improve inflammatory issues, like bronchitis, chronic coughs and metabolic disorders. Fenugreek tea is available and can be used on the skin and hair.[8] Fenugreek seed contains saponins, flavonoids, and alkaloids that exhibit anti-inflammatory and antioxidant activity. Fenugreek seed powder has most often been used

by adults in doses of 5-10 grams by mouth daily for up to 3 years.

Calendula (Calendula Officinalis)



One of the best anti-inflammatory herbs is Calendula. The anti-inflammatory benefits of calendula come from the linoleic acid content, which has proved to be a potent remedy for issues like dermatitis, ulcers, sore throat and diaper rash. It is also used to fight infections and promote oral health.[8] acid esters are responsible for the anti-inflammatory effects of Calendula flowers. In chronic anti-inflammatory model using formalin, administration of 250 and 500 mg/kg body weight.

Licorice Root (Glycyrrhiza Glabra)



Licorice root is an adaptogenic herb that has been used for a long time for its anti-inflammatory properties. Its anti-inflammation potential comes from its coumarins and stilbenoids, and it is often used for gastrointestinal issues, coughs and colds.[8] Licorice root contains beneficial

compounds like glycyrrhizin, which has antioxidant, antimicrobial, and anti-inflammatory properties. Licorice extract has most often been used by adults in doses of 100-990 mg by mouth daily for 2-24 weeks.

Rosemary (*Rosmarinus Officinalis*)



Rosemary belongs to the mint family. It's commonly used in cooking, but its essential oils are also used therapeutically for their ability to reduce inflammation. The herb can help boost memory and focus and can be used topically to relieve pain and stimulate hair growth.[8] Rosemary contains compounds like Rosmarinus acid and carnosol, which possess anti-inflammatory properties. doses of 4 to 6 g/day.

Cat's Claw (*Uncaria Tomentosa*)



Cat's claw is a powerful herb from the Amazon and it also has anti-inflammatory properties. Today, cat's claw can be found in liquid extract and capsule, and it is known for its ability to improve

inflammatory digestive problems. It can be used to relieve muscle and joint pain.[8] Cat's claw contains many types of plant chemicals that help reduce inflammation, such as tannins and sterols, and fight viruses. The usual doses used vary by preparation, from 30 to 300 mg of extract once daily.

Garlic (*Allium Sativum*)

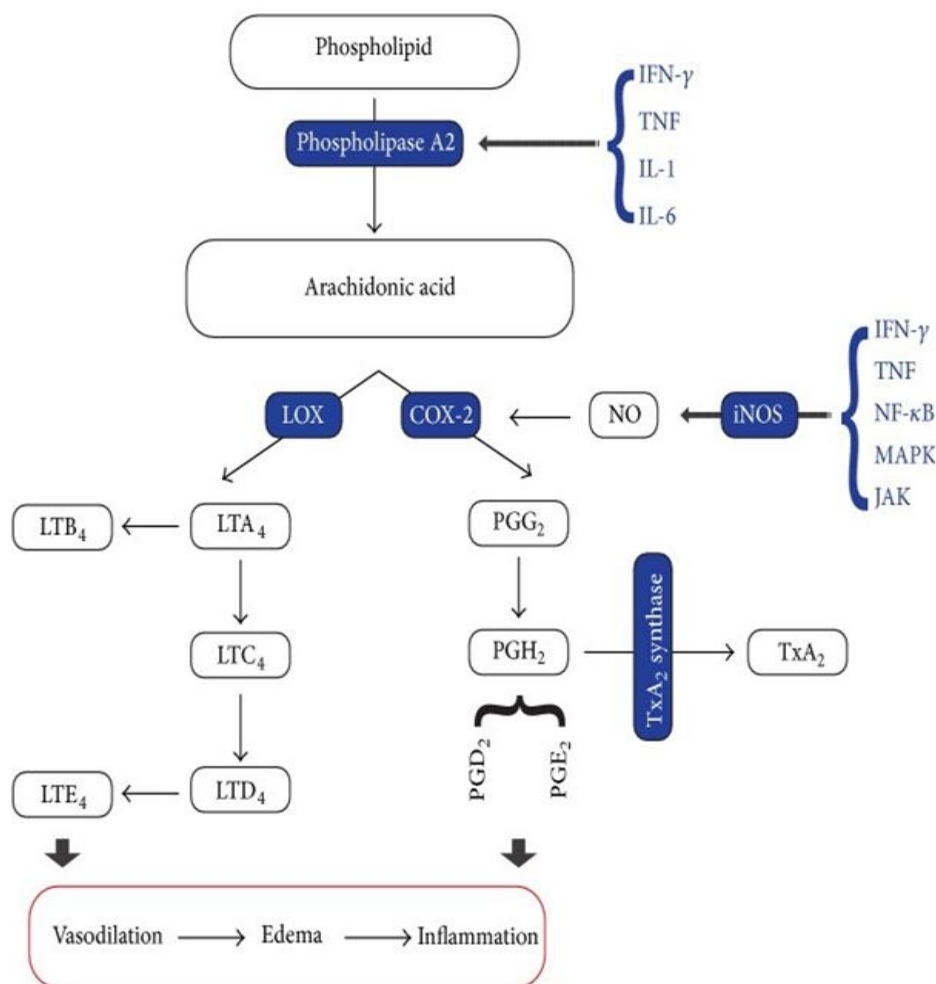


The taste and smell of garlic are very strong. Many people have used it as a traditional medicine for hundreds of years to treat a variety of conditions. The anti-inflammatory properties of garlic have been shown to ease the symptoms of arthritis. Adding flavour to food is one of the benefits of the spice.[8] Garlic contains diallyl disulfide an anti-inflammatory compound that limits the effects of pro-inflammatory cytokines. doses of garlic powder ranged from 300 to 2,400 mg/day for 2 to 24 weeks.

CONCLUSION:

The amount of plants that have been claimed to have an anti-inflammatory effect is not the scope of this paper, so we have sufficed to mention the herbs about which there is more evidence. There are many studies that claim to show the role of several herbs in reducing inflammation. The *Curcuma longa* had the most clinical evidence about different inflammatory disorders such as RA, Uveitis, and was one of the herbs we introduced. The experimental studies clearly show

the potential role of herbs in inflammation. Evaluation of all of the plants that have been claimed to have anti-inflammatory effect is out of the scope of this paper.[1]



Inflammation pathway. COX, cyclooxygenase; LOX, lipoxygenase; PG, prostaglandin; LT, leukotriene; TX, thromboxane; NO, nitric oxide; iNOS, inducible NO synthase; IFN, interferon; TNF, tumor necrosis factor; NF-κB, nuclear factor-κB; MAPK, mitogen activated protein kinase; JAK, janus kinase; IL, interleukin.

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HOW TO CITE: Akanksha Shendkar*, Nikita Pawar, Arundhati Kore, Jagruti Shelar, Anti-Inflammatory Agents: A Review on Herbs That Reduces Inflammation, *Int. J. of Pharm. Sci.*, 2025, Vol 3, Issue 6, 444-451. <https://doi.org/10.5281/zenodo.15584768>

