IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 5, Issue 3, January 2025

A Review On Anti Rheumatoid Effect of Ficus Benghalensis Arial Root Extract

Miss. Sanika Santosh Dhage and Mr. Shreenivas Ramnath Bhise
Student, Department of Pharmacy
Yashodeep Institute of Pharmacy, Pimpalgaon Pandhari, Chhatrapati Sambhajinagar.
sanikadhage1444@gmail.com and bhiseshreenivas1351@gmail.com

Abstract: *One of the biggest genera in the plant kingdom and a member of Moraceae family in Ficus. Numerous populations of these species can be found throughout most Asian nations, including the wide range of phytoconstituents. Including sugar, proteins, essential and volatile oils, phenols, flavonoids, alkaloids, tannins, saponins, terpenoids and glycosides according to the chemical analysis report. The goal of current study is to study the antirheumatoid effect of arial root powder of Ficus benghalensis. The chronic autoimmune disease known as rheumatoid arthritis is typified by joints destruction, discomfort, and inflammation. Ficus benghalensis is a traditional medicinal plant that may be used as a treatment for rheumatoid arthritis because of its anti-inflammatory, antioxidant, and immunomodulatory qualities. With an emphasis on the phytochemical components and pharmacological processes, this study attempts to provide an overview of the available data regarding Ficus benghalensis's antirheumatoid properties. According to the information now available, Ficus benghalensis extracts and isolated components have strong antioxidant and anti-inflammatory properties, which may help to explain some of its anti-rheumatoid properties.*

Keywords: Ficus benghalensis, Rheumatoid arthritis, Anti-inflammatory, Antioxidant

I. INTRODUCTION

Ficus is well known for its diversity. Ficus genera are classified as dicotyledon and spermatophyte phylum of the plantae kingdom and they are part of the Moraceae family of the Urticales order. Certain species are revered in India particularly Ficus benghalensis know as India national tree and a symbol of spiritual wisdom ad eternal life Ficus benghalensis also known as the Banayan tree is a species of fig tree to the India subcontinent and southest Asia.

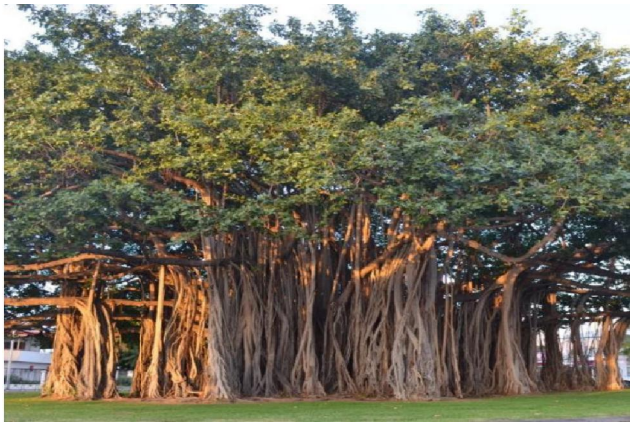

Fig. 1 Ficus benghalensis tree

The plant that produces the most oxygen and have the fastest rate of photosynthesis are Ficus species. The typically contain a latex like gummy substance in their vasculatures that has self-healing property and play a role in the defence upon physical role in the defence upon physical assults to the plant. The common name of Ficus benghalensis come

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from the Britishers who noticed a specific community called "Baniya" that used to have rest in its shade. The banyan tree is the national tree of India and is consider sacred and symbol of spiritual knowledge.

II. AIM AND OBJECTIVE

Aim: To provide a comprehensive review of the anti-rheumatoid effect of Ficus benghalensis, exploring its phytochemical constituents, pharmacological mechanism, and potential therapeutic application.

Objective:

1] To summarize the phytochemical constituents of Ficus bhenghalensis, particularly those with anti-inflammatory and property.

2] To review the pharmacological mechanism underlying the anti-rheumatoid effect of Ficus bhenghalensis, including inhibition of inflammatory mediators, modulation of immune responses, and antioxidant activities.

III. LITERATURE REVIEW

Kumar et al. (2013): Isolated and characterized flavonoids, phenolic acids, and Terpenoids from Ficus bhenghalensis.
Singh et al. (2015): Identified alkaloids, glycosides, and saponins in the plant's leaves and stems.
Chopra et al. (2012): Demonstrated antioxidant, anti-inflammatory, and antimicrobial activities of Ficus benghalensis extract.
Rao et al. (2017): Showed potential anti-diabetic and anti-hyperlipidemic effects of the plant's extracts.
Warrier et al. (2014): Documented traditional uses of Ficus benghalensis in folk medicine, including treatment of wounds, fever, and digestive issues.
Kumar et al. (2018): Explored ethnobotanical significance of the plant in various cultures.
Singh et a. (2015): Conducted acute and sub-acute toxicity studies, revealing no significant adverse effects.
Rao et al. (2019): Investigated potential interactions with other medication and safety profile.

Monograph of Ficus benghalensis

Botanical Name: Ficus benghalensis
Family: Moraceae
Common Names: Banayan tree, Indian banyan, Vada tree
Habitat: Native to the Indian subcontinent and southeast Asia
Description: Large deciduous tree with a broad canopy. Arial roots form a network of pillar.
Leaves: Large, elliptical, and leathery
Fruits: small, red, and edible

Phytochemicals:

1. Flavonoids (quercetin, kampferol)
2. Phenolic acids (gallic acid, ellagic acid)
3. Terpenoids (lupeol, belulin)
4. Glycosides (licin)

Pharmacological Activities:

1. Anti-inflammatory
2. Antioxidant
3. Antimicrobial
4. Antidiabetics

IV. RHEUMATOID ARTHRITIS

The tiny diarthrodial joints in the hand and feet are the main site symmetric polyarticular arthritis, or rheumatoid arthritis. It is chronic autoimmune disease that cause inflammation, pain and stiffness in the joints. The cause of rheumatoid arthritis are genetics, autoimmune response and environmental factors such as infections, stress and

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hormonal changes. Some complication caused by rheumatoid arthritis are joint damage and deformity, Osteoporosis, increased risk of infections, cardiovascular disease, mental health issues (e.g. Depression, anxiety.)

Fig. 3 Rheumatoid arthritis

4.1. Stages of rheumatoid arthritis

Stage 1: The tissue surrounding your joint or joints is inflamed in early-stage RA. You can experience some stiffness and joint pain. Your doctor won't notice harmful changes in your bones if they order X-rays.

Stage 2: Your joints cartilage is starting to deteriorate due to the inflammation. You may experience reduced rage of motion and stiffness.

Stage 3: Your bones are harmed by the extreme inflammation compared to stage 2, you will experience even reduced rang of motion, increased discomfort, and stiffness. Physical changes might begin to manifest.

Stage 4: Your joints continue to deteriorate even if the inflammation has stopped. You'll experience excruciating pain, stiffness, edema, and decreased movement.

4.2. Chemical Constituents

The following chemical constituents in Ficus benghalensis has been identified to have anti-arthritic and anti-inflammatory properties:

Flavonoids: Quercetin, Kaempferol, Gallic acid

Phenolic acids: Ferulic acid, Cinnamic acid

Triterpenoids: Lupeol, Betulinic acid

Alkaloids: Skimmiaine, Dictamine, Bergapten

Glycosides: Flavonoid glycosides (e.g., querceti-3-O-rutinoside)

4.3. Mechanism of action

These constituents may help alleviate rheumatoid arthritis symptoms by

Inhibition of pro-inflammatory cytokines (e.g. TNF-a 11-13): The production of pro-inflammatory cytokines, such as interleukn-1 beta and tumor necrosis factor-alpha may be inhibited by Ficus benghalensis extracts and substances such gamajunine and bergapten.

Reducing oxidative stress and inflammation: Ficus benghalensis extract and compounds like flavonoids, phenolic acids, and terpenoids may scavenge free radicals, reducing oxidative stress. The pro-inflammatory cytokines like TNF-a, IL-1b and IL-6 production may inhibited by Ficus benghalensis.

Modulating Immune response: Immune cells like macrophages and neutrophils phagocytic activity may enhance by Ficus benghalensis. It may activate natural killer cells, which play crucial role in innate immunity.

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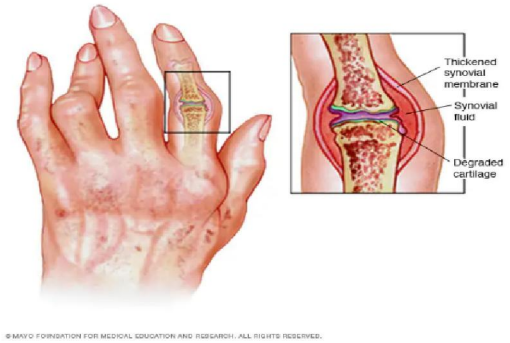

Inhibiting joints destruction and cartilage degradation: Ficus benghalensis extracts and compounds may inhibit metalloproteinases, which are involved in joint destruction and cartilage degradation. Ficus benghalensis may inhibit RANKL-induced osteoclastogenesis, which is involved in bone erosion and joint destruction.

V. CONCLUSION

Ficus benghalensis's extensive phytochemical profile and varied pharmacological effects have been linked to its notable anti-rheumatoid potential. Rheumatoid arthritis-related joint inflammation, discomfort, and autoimmune reactions may be lessened by the plant's anti-inflammatory, antioxidant, and immunomodulatory properties.

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