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Short Communication

ANTI-INFLAMMATORY ACTIVITIES OF PLANT EXTRACTS

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SHORT COMMUNICATION

Anti-Inflammation

Inflammation (redness, swelling, and pain) in the body is reduced by a medicine or chemical. Anti-inflammatory drugs work by preventing the body from producing particular compounds that cause inflammation. They're utilised to cure a variety of ailments. Some anti-inflammatory drugs are being researched for cancer prevention and therapy.

Inflammation is caused by infectious microorganisms such as bacteria, viruses, or fungi invading the body, residing in specific tissues, and/or circulating in the blood. Inflammation can also occur as a result of tissue damage, cell death, malignancy, ischemia, and degeneration. In most cases, both the innate and adaptive immune responses are implicated in the development of inflammation.

The innate immune system, which includes macrophages, mast cells, and dendritic cells, is the most important defensive mechanism against invading microbes and cancer cells. More specialised cells, such as B and T cells, are responsible for destroying invading pathogens and cancer cells by creating particular receptors and antibodies in the adaptive immune system. During various forms of inflammatory reactions, a variety of inflammatory mediators are synthetized and released. Pro- and anti-inflammatory mediators are the two primary groups of inflammatory chemicals.

Some mediators, such as interleukin (IL)-12, do, however, have both pro- and anti-inflammatory effects. Cytokines (e.g., interferons, interleukins, and tumour necrosis factor), chemokines (e.g., monocyte chemoattractant protein 1), eicosanoids (e.g., prostaglandins and leukotrienes), and the potent inflammation-modulating transcription factor nuclear factor B are among the inflammatory mediators and cellular pathways that have been extensively studied in association with human pathological conditions.

Plant extracts

Extraction of medicinal plants is the separation of active plant components or secondary metabolites such as alkaloids, flavonoids, terpenes, saponins, steroids, and glycosides from inert or inactive material using a suitable solvent and a conventional extraction technique. Plant extraction is a method for extracting specific components from plants. It's a solid/liquid separation procedure in which a solid object (the plant) is brought into contact with a liquid (the solvent). The solvent is then used to solubilize and contain the plant components of interest. Plant extracts are becoming more popular in the food business as a result of their high content of bioactive chemicals including polyphenols and carotenoids, which have antibacterial and antioxidant properties, particularly against LDL and deoxyribonucleic acid (DNA).

Plant extracts' anti-inflammatory activity may be assessed using both *in vitro* and *in vivo* experiments. *In vivo* anti-inflammatory effect may be tested using a carrageenan-induced hind paw edoema model, whereas *in vitro* screening can be done using a lipoxygenase inhibition assay. *In vitro* anti-inflammatory effects are routinely assessed using protein denaturation and membrane stabilisation tests. A minimum of three *in vitro* tests have been utilised by several studies to assess the anti-inflammatory effectiveness of herbal components.

Inflammatory disorders are frequent in industrialised and developing nations' ageing societies. Rheumatoid arthritis is one of them. Over the years, drugs including NSAIDs and corticosteroids have been employed. These medications, however, have negative effects, some of which are permanent. Furthermore, medication manufacture is a costly endeavour, and before a medicine can be used in humans, it must first pass clinical studies, which can take many years. With the rise of inflammatory disorders throughout the world, mankind has turned to traditional or phyto-medicine for relief.

Tropical nations have a huge advantage in this area due to their enormous biodiversity, since their distinct flora and fauna are a source of these medicinal anti-inflammatory medicines. Plants can be utilised to treat inflammatory illnesses as crude extracts or anti-inflammatory natural compounds can be separated from them and used to treat inflammation. Curcumin, resveratrol, baicalein, boswellic acid, betulinic acid, ursolic acid, and oleanoic acid are examples of natural compounds isolated from plants that have significant anti-inflammatory properties.

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