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Review Article……!!!

PHARMACOLOGICAL APPLICATION OF CAFFEIC ACID

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KEYWORDS:

Lignin, Antioxidant activity, Photosynthesis, Caffeic acid, Hormonal activity.

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ABSTRACT

Caffeic acid is a natural phenolic acid which is synthesized by plants as a secondary metabolite. Caffeic acid and its natural and synthetic derivatives show potent antioxidant activity, even in low concentrations. More over, it has been proved in many biological investigations that caffeic acid and the analogues also display anti-inflammatory, antibacterial, antiviral and antitumour activities. Recent inrestigations have demonstrated that caffeate esters, especially methyl caffeacte, display sucrose and maltase inhibition due to advantageous biological effects, phenolic acids and their derivatives have become an essential instrument for the prevention or treatment of many diseales, and they have therefore found wide application of cosmetic and pharmaceutical industries. Phenolic acids, most notably caffeic acid, are also important scaffolds for the synthesis of a variety of biologically active compounds.

INTRODUCTION:

Caffeic acid 3,4-dihydroxy cinnamic acid is a cinnamic acid and considered as an important phenyl propanoid found in plants. The caffeic acid is primarily involved in the synthesis of lignin. In addition, it is also involved the regulation of cell expansion, turgor pressure, phototropism, water flux, and growth. It is being also widely studied for its pharmacological aspect for human health. Caffeic acid, and its derivatives, are evidently known to be involved in plant biotic and abiotic stress tolerance including pathogen attacks, low and high temperature stress, UV light, drought, heary metal stress and salinity stress.

PHARACOLOGICAL ROLE OF CAFFEIC ACID:

1. Lesser accumulation of ros, increased mitochondrial and higher chloroplast activity resulted in lower stress load.
2. Modification of growth pattern, increased lignifications and increased antioxidant activity.
3. Increased antioxidant activity
4. Increased photosynthesis and antioxidant enzymes activity
5. Improved vegentative growth
6. Improved enzymatic and hormonal activity
7. In crease chloroplast higher activity
8. Increase production of compatible solutes and antioxidant activity
9. Lignin formation
10. Improved root and shoot growth
11. Increase production of compatible solutes and antioxidant activity

CONCLUSION:

Caffeic acid and its derivatives are known to be associatd in managing plant physiology under drought stress. Caffeic acid mediates the absorption of high energy radiations in mesophyll cells under drought stress. It is strongly suggested that caffeic acid and its derivatives regulate the plant defense responses against biotic and abiotic stress. Caffeic acid metabolism indicates that it is a key process in plants cells that is vital for normal functioning of several physiological processes in plant. Caffeic acid inhibits lipid peroxidantion scavenging these alkoxyl radicals and prevent damage to cells and mitigate the heavy metal stress.

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