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Pharmaceutical Sciences **Review Article……!!!**

MEDICINAL APPLICATIONS OF FERULIC ACID

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KEYWORDS:

Ferulic acid, anticancer, antimicrobial, antioxidant activity, antidiabetic activity.

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ABSTRACT

Ferulic acid 4-hydroxy-3 methoxycinnamic acid and related compounds pertain to the phenolic acids group and are ubiquitous components of the primary cell walls of several plants, occurring in their seeds and leaves in both its free form and esterified to mono-and disaccharides, plant cell wall polysaccharides, glycoproteins, polyamines, lignin and hydroxylateed fatty acids. The best reports biological activities of ferulic acid are undoubtedly those related to its antioxidant properties that are mainly due its phenolic nucleus and the conjugated 3C-side chain. Recent studies support evidence that ferulic acid exerts a variety of health benefits through its antioxidant properties, especially against chronic diseases associated with oxidative damage.

INTRODUCTION:

Ferulic acid plays important roles in plant cell walls, including protection against pathogen invasion. E-feruloyltramine a derivative of ferulic acid, is synthesized in response to wounding, and this restricts enzymic dissolution of the cell wall polymers. Besides its inhibiting action on plant growth, ferulic acid can also inactivate plant viruse 3 and its direct many antibiotic purposes.

Ferulic acid acts as an effective electrophilic trapping agent and inhibits the occurrence of pulmonary cancers in mice. It also exhibits inhibitory effect on 4-nitro quinoline oxide (4-Q0) induced rat tongue carcino genesis. The antioxidant activity of ferulic acid is well recognized. Topically applied antioxidant drugs represent a successful strategy for protecting the skin against UV-mediated oxidative damage. Feruloyl esterases enhance paper pulping process by removing substitutions and linkages, between the polymers during pulping, thus making the solubilization of lignin carbohydrate complexes easier.

APPLICATIONS OF FERULIC ACID:

1. Antimicrobial activity
2. Anti-znflammatory activity
3. Anti diabetic activity
4. Anti cancer activity
5. Food industry
6. Anti oxidant activity
7. Plant cell wall protection
8. Antibiotic purposes
9. Enzymic activity
10. Antifungal activity
11. Skin protection
12. Gum and resin production
13. Gel matrix
14. Food preservative agents
15. Degradation process

CONCLUSION:

Ferulic acid, a ubiquitous natural phenolic phytochemical compound present in seeds, leaves, both in its free form and coralently conjugated to the plant cell wall polysaccharides, glycoproteins, polyamines, lignin and hydroxy fatty acids. Ferulic acid plays a vital role in providing the rigidity to the cell wall and formation of other important organic compounds like coniferyl alcohol, vanillin, sinapic, diferulic

acid and curcumin. Ferulic acid wide variety of biological activities such as antioxidant, anti allergic, hepatoprotective, anti thrombotic, increase sperm viability, vasodilatory actions, metal chelation, modulation of enzyme activity and activation of transcriptional factors, gene expression and signal transduction.

REFERENCES:

1. Akin D. E. (1998). Biological strcture of lignocelluloses and its degradation in the rumen. Anim. Food. Sci., Technol., 21: 295-310.
2. Graf E. (1992). Antioxidant potential of ferulic acid. Free Rad. Biol. Med., 13: 436-448.
3. Kondo T, Mizuno K. and Kato T. (1990). Cell wall bound P- coumaric and ferulic acids in Italian rye grass. Can. J. plant Sci., 71: 495-499.
4. Shibuya N. (1984). Phenolic acids and their carbohydrates esters in rice endosperm cell wall. Phyto chemistry., 23: 2233-2237.
5. Wang H and Peng R. X. (1994). Sodium Ferulate alleriated paracetamol induced liver toxicity in mice. Acta pharmacol sila., 15: 81-83.
6. Smith B.G. and Harris P.J. (2001). Ferulic acid is esterified to glucuronoarabinoxylans in pineapple cell walls. Phytochemistry. 56: 513-519.
7. Bell A. A. (1981). Biochemical mechanism of disease resistance. Annu. Rev. Plant Physiol., 32: 21-81.
8. Glucin I. (2006). Antioxidant activity of caffeic acid (3,4- dihydroxycinnamic acid), Toxicology. 217: 213-220.
9. Huang M. T. and Ferraro T. (1992). Phenolic – Compounds in Food and Cancer Prevention. ALS Symp. Ser., 507: 8-34.
10. Graf E. (1992). Antioxidant potential of Ferulic acid, Free Radical Biol., Med., 13: 435-448.
11. Booth T.R. (1985). Regulations of cytoplasmatic ph in bacteria. Micro boil. Rev., 49: 359-378.
12. Burt S. (2004). Essential oils: their antibacterial properties and potential applications in foods. Review. Int. J. Food micro boil., 94: 223-253.