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

PLANT SECONDARY METABOLITES AND THEIR ROLE

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ABSTRACT

Plant secondary metabolites are organic compounds or phytochemials that are not directly involved in the normal growth, development or reproduction of the plant. These secondary metabolites are classified into three namely terpenes, phenlic compounds and nitrogen containing compounds. Their bio dyntheses are derived from primary metabolism pathways, which include tricarboxylic acid cycle(TCA), methyletithrotol phosphate (MEP) pathway, mevalonic and shikimic acid pathway. They can be extracted from plants using organic solvents and modern separation techniques to get the analyte of interest. Their economic importance unclude their role in antimicrobial, pharmaceutical, plant defence against herbivory, fragrance, stimulants, toxicity, arrtactant, plant breeding, physiological stress response, and allelopathic effect.

INTRODUCTION:

Plant produce a high diversity of natural products or secondary metabolites with a prominent function in the protection against the predators and microbial pathogens on the basis of their toxic nature and repellence to herbivores and microbes and some of which also involved in defense against abioxic stress and also important for the communication of the plants with other organisms, and are insignificant for growth and developmental precesses. There are three major groups of secondary metabolites Viz., terpenes, phenolics, nitrogen and sulphur containing compounds.

1. **TERPENES:**

This constitutes the largest class of secondary product. They are also called terpenolids, the diverse substances of this class are generally insoluble in water. All terpene are derived from the union of five carbon atom that have the branched carbon skeleton of isophentance. The basic streural element of terpene are sometimes called isoprene unit because terpene decompose at high temperature to give isoprene. Terpene are toxic and feeing deterrents to many plants feeding insect and mammals. Thus they appear to have important defensive role in the plant kingdom.

2. **PHENOLIC COMPOUNDS:**

Plant produce a large variety of secondary product that contains a phenol group-a hydroxyl functional group on an aromatic ring. These substances are classified as phenolic compouns. Phenolic are wide spread in vascular plants and appear to function in different capacities. The derivatives of phenolic compounds include simple propanoid, benzoic acid deriratives, antocyanin, isoflavones, tannins, lignin and flavonoid. Plants produce a large and diverse array of organic compounds that appear to have no direct functions in growth and development, they have no generally recongnised roles in the process of photosynthesis, respiration, solure transport, translocation, nutrient assimilation and differentiation. They have a very restricted distribution than primary metabolites in the whole plant kingdom. They are often found only in one plant species of a taxonomically related group of species. High concentrations of secondary metabolities might result in a more resistant plant. Their production is thought to be costly and reduces plant growth and reproduction.

CLASSIFICATION OF PLANT SECONDARY METABOLITE:

Plant secondary metabolites can be divided into three chemically distinctive groups namely.

1. Terpenes
2. Phenolic compounds
3. Nitrogen containing compouns

3. NITROGEN-CONTAING COMPOUNDS:

A large variety of secondary metabolites have nitrogen in their strcture these include the alkaloids, cyanogenic glycoside, glycosinate. The role of alkaloid in plants has been subject of speculation for at least 100 years. Alkaloid were once thought to be nitrogenous wastes. Most alkaloid are now belived to function as defense against especially mammals, because of the general toxicity and deterrence capacity.

CONCLUSION:

Plants have evolved multiple defense mechanisms against microbial pathogens and various types of envitonmental stress. Plants synthesize a number of anti-microbial secondary metabolite, some of which are preformed and some of which are induced after infection. These metabolites synthesized using various pathways but ultimate role is to protect the plant from stress conditions. Plant secondary metabolites are generic term used for more than 30,000 different substances which are exclusively produced by plants the importance of these substances has only recently been discovered by svientists. Secondsry metabolite carry out a number of protective functions in the human body, it can boost the immune system, protect the body from the free radicals, kill pathogenic germs and much more keep the body fit.

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