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MINI REVIEW ARTICLE

A REVIEW ON ISOLATION OF PLANT PIGMENTS BY COLUMN CHROMATOGRAPHY

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ABSTRACT:
Methods described in literature for isolation of plant pigments by column chromatography are reviewed. Column chromatography is an effective way to isolate plant pigments. This technique can help scientists identify the different constituents of a sample and provide insight into their metabolic pathways. Column chromatography is a powerful technique used to separate and identify plant pigments. It is a reliable and economical method for extraction of these natural compounds from plants. Plant pigments play important roles in the growth and development of plants. Plant pigments have immense potential for use in pharmaceuticals, cosmetics, and food products.
Key words: *Pigment, Chromatography, Photosynthesis*

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INTRODUCTION:

Column chromatography is a powerful technique used to separate and identify plant pigments. It is a reliable and economical method for extraction of these natural compounds from plants, which have immense potential for use in pharmaceuticals, cosmetics, and food products [1]. This blog will provide an overview of column chromatography and its applications in the isolation of plant pigments. We will discuss the principles behind the technique, along with the advantages and limitations associated with it. Finally, we will also look at some examples of specific applications of column chromatography in extracting plant pigments [2].

PLANT PIGMENTS AND THEIR FUNCTIONS:

Plant pigments play important roles in the growth and development of plants. They are involved in photosynthesis, which helps plants to convert sunlight into energy. Pigments also help plants to absorb light for photosynthesis, and to protect themselves from harmful UV rays.

There are three main types of plant pigments: chlorophylls, carotenoids, and anthocyanins. Chlorophyll is the pigment that gives plants their green color. It helps plants to absorb energy from sunlight and is essential for photosynthesis [3]. Carotenoids are yellow, orange, or red pigments that give color to fruits and vegetables. They act as antioxidants, protecting plants from damage caused by ultraviolet light. Anthocyanins are water-soluble pigments that give flowers their blue, purple, or red colors. They protect plants from the damaging effects of sunlight and help flowers to attract pollinators. Column

chromatography is a technique used to isolate individual plant pigments from a mixture. In column chromatography, a plant pigment mixture is placed on top of a column of adsorbent material. The column is then washed with a solvent, which causes the different pigments to travel down the column at different rates depending on their solubility. The individual pigments can then be collected at the bottom of the column and analyzed further.

ISOLATION OF PLANT PIGMENTS BY COLUMN CHROMATOGRAPHY:

In column chromatography, a plant pigment is isolated by passing a solvent containing the mixture of pigments through a column packed with an adsorbent material. The individual pigments in the mixture travel at different rates and are separated as they move up the column [4].

Column chromatography is an efficient way to separate and purify plant pigments. It is often used when large quantities of pigment are needed, such as for industrial applications.

FACTORS AFFECTING THE EFFICIENCY OF PLANT PIGMENT ISOLATION:

When isolating plant pigments using column chromatography, there are several factors that can affect the efficiency of the process. The type of column used, the kind of solvent used, and the amount of time the pigment is allowed to elute are all important considerations [5]. The type of column can have a big impact on the efficiency of pigment isolation. A well-packed column will allow for better separation of the pigments, while a less densely packed column will result in a less pure final product. The kind of solvent used is also important. A polar solvent will tend to bind more strongly to pigments than a non-polar solvent, resulting in better isolation. However, too polar of a solvent can cause the pigments to elute too slowly, so it is important to find a balance. Finally, the amount of time the pigment is allowed to elute is crucial. If eluted too quickly, the pigment will not be fully isolated and may still contain impurities. If eluted too slowly, however, the process will take much longer than necessary and may result in loss of some of the pigment during extraction [6].

CONCLUSION:

In conclusion, column chromatography is an effective way to isolate plant pigments. This technique can help scientists identify the different constituents of a sample and provide insight into their metabolic pathways. With careful optimization, this method could be used for both qualitative and quantitative analysis of complex samples such as those obtained from natural extracts or industrial processes. By separating and identifying these components, researchers can gain a better understanding of how plants work at the molecular level.

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