

A Short Note on Paper Chromatography and Its Types

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Commentary Article

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ABSTRACT

Two-dimensional chromatography is a type of paper chromatography that includes utilizing two solvents and rotating the paper 90 degrees in between. This is useful for distinguishing complex combinations of comparable polarity chemicals, such as amino acids. There are three parts to the setup. Due to capillary action, the mobile phase is a solution that travels up the stationary phase. The mobile phase is usually a mixture of non-polar organic solvents, while the stationary phase is water, which is a polar inorganic solvent. The stationary phase, water, is supported here by paper.

INTRODUCTION

The analytical method of paper chromatography is used to separate colored chemicals or materials. It is now mostly used as a teaching aid, as various chromatography procedures such as Thin-layer Chromatography have superseded it in the laboratory (TLC).

Partition chromatography or adsorption chromatography are two methods that can be used. Because the compounds are partitioned or spread between liquid phases, partition chromatography is used. Water is retained in

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the filter paper's pores, and the other phase is a mobile phase that passes through the paper. The separation of the mixture occurs when the mobile phase moves. Under the capillary action of pores in the paper, the chemicals in the mixture separate themselves based on differences in their affinity for stationary and mobile phase solvents.

Adsorption chromatography between solid and liquid phases, with the stationary phase becoming the solid surface of the paper and the mobile phase being the liquid phase.

Paper chromatography has a lot of uses. Below are some of the uses of Paper Chromatography in various fields:

- To investigate the fermentation and ripening processes.
- To ensure that medications are pure.
- To examine cosmetics.
- Adulterants must be detected.
- To identify pollutants in beverages and meals.
- In biochemical laboratories, to examine reaction mixtures.
- To determine the presence of drugs and dopes in humans and animals.

Types

Descending: The chromatogram is developed by letting the solvent flow down the paper. The mobile phase is placed in the top-most solvent holder. The spot is held at the top of the paper, while the solvent pours down from above.

Ascending: The solvent goes up the chromatographic paper at this point. Organic and inorganic substances are separated using both ascending and descending paper chromatography. Both the sample and the solvent are moving higher.

Descending: This is a combination of the two procedures mentioned above. The upper portion of descending chromatography can be folded over a rod to make the paper fall after crossing the rod.

Chromatography in a circle: A circular filter paper is used, with the sample being placed in the center. After the spot has dried, the filter paper is placed horizontally on a Petri dish filled with solvent, with the wick of the paper dipped in the solvent. The solvent raises the wick, separating the components into concentric rings.

Two-dimensional: A square or rectangular piece of paper is utilized in this technique. The sample is applied to one of the corners, and development is performed out at a right angle to the first run's direction.

Chromatography can be used for either preparative or analytical purposes. Preparative chromatography is a type of purification that is used to separate the components of a mixture for later use. It should also be highlighted that, due to its manufacturing method, this technique is connected with greater prices. Analytical chromatography is

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used to determine the presence or measure the relative proportions of analytes in a mixture using smaller amounts of material. The two categories do not have to coexist.