

# Uses

Ninhydrin is widely used in the analytical chemistry as a reagent for detecting various substances by TLC. Spraying the TLC patterns with ninhydrin reveals the spot of  $\alpha$ -amino Acids, peptides, ephedrine and pseudoephedrine hydrochloride, caffeine, theophylline, morphine hydrochloride, gentamicin sulfate, neomycin, Gamma-aminobutyric acid, tauphon and many other.

The stained products of reactions with ninhydrin are unstable and the intensity of spot coloration on the TLC pattern decreases very rapidly. Some metal ions are capable of stabilizing the stained pattern. For example, cadmium chloride added to the ninhydrin reagent forms stable complexes with Ruhemann's violet. Copper sulfate sometimes substituted for cadmium chloride also reacts with Ruhemann's violet to form an orange-red compound.

Ninhydrin can also be used to monitor deprotection in solid phase peptide synthesis (Kaiser Test) When the growing peptide chain is deprotected, a ninhydrin test yields blue. If the next peptide residue is coupled then the test is colorless or yellow.

Used for the detection of free amino groups in amino acids, peptides and proteins  
Used in the detection and assay of peptides, amino acids, amines, and amino sugars yielding highly fluorescent ternary compounds with aldehydes and primary amines. Reaction with sarcosine or proline gives azomethine ylides.

Ninhydrin is also used in amino acid analysis of proteins: Most of the amino acids are hydrolyzed and reacted with ninhydrin except proline; Also, certain amino acid chains are degraded. Therefore, separate analysis is required for identifying such amino acids that either react differently.

A reaction of ninhydrin with amino acids or related amino compounds used for the colorimetric determination of amino acids, peptides, or proteins by measuring the intensity of the blue to violet to red color formed or for the quantitative determination of amino acids by measuring the amount of carbon dioxide produced.

Ninhydrin used for preparation of Hydrindantin by reduction of ninhydrin with ascorbic acid.

A ninhydrin solution is commonly used by forensic investigators in the analysis of latent fingerprints on porous surfaces such as paper. Amino acid containing finger marks, formed by minute sweat secretions which gather on the finger's unique ridges, are treated with the ninhydrin solution which turns the amino acid finger ridge patterns purple and therefore visible.