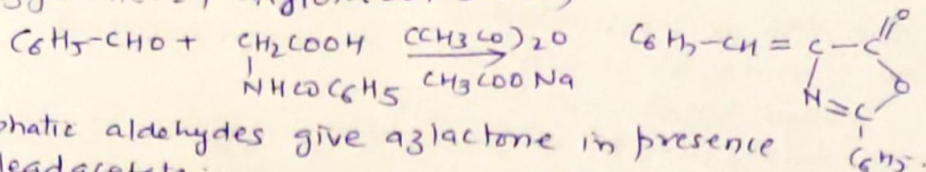


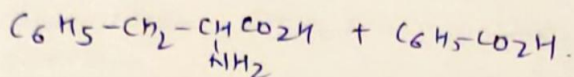
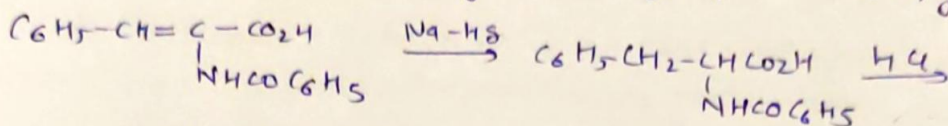
Preparation of Amino acids: The Azlactone Synthesis

also called Erlenmeyer Synthesis: Azlactones are prepared by heating an aromatic aldehyde with hippuric acid (benzoyl glycine) in the presence of acetic anhydride and sodium acetate. e.g. Benzaldehyde forms benzoyl- α -aminocinnamic azlactone (4-benzylidene-2-phenyloxazol-5-one)

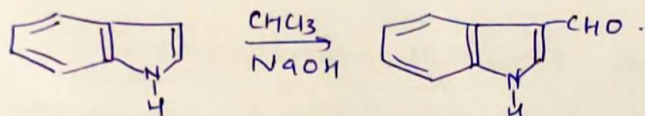


aliphatic aldehydes give azlactone in presence of lead acetate.

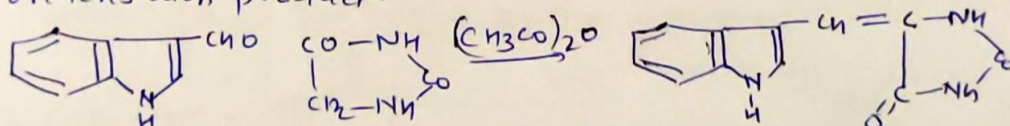
When azlactones are warmed with 1% NaOH the ring opens and this is subjected to Na-Hg followed by hydrolysis to give α -amino acid. This method is used to prepare phenylalanine, tyrosine, tryptophan and threonine



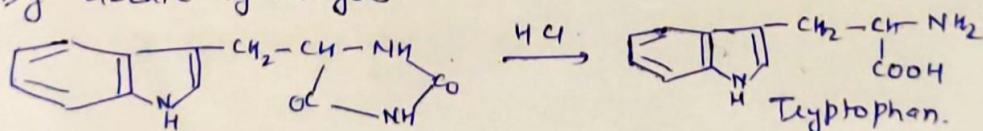
★ HYDANTOIN Process: This following method is used to make tryptophan. Indole-3-aldehyde is prepared by Reimer-Tiemann reaction of Indole.



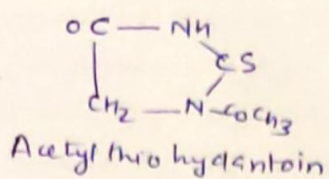
Indole-3-aldehyde is now condensed with hydantoin in presence of hydantoin and acetic anhydride to give condensation product.



The condensation product is reduced with Na-Hg followed by acidic hydrolysis.

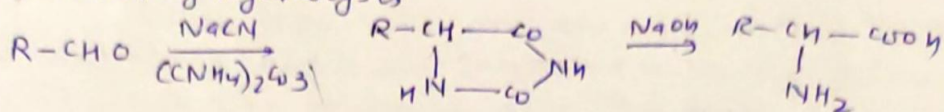


The hydantoin method has been improved by using N-acetyl thiohydantoin. The above method may be used to prepare phenylalanine, tyrosine, tryptophan and methionine.

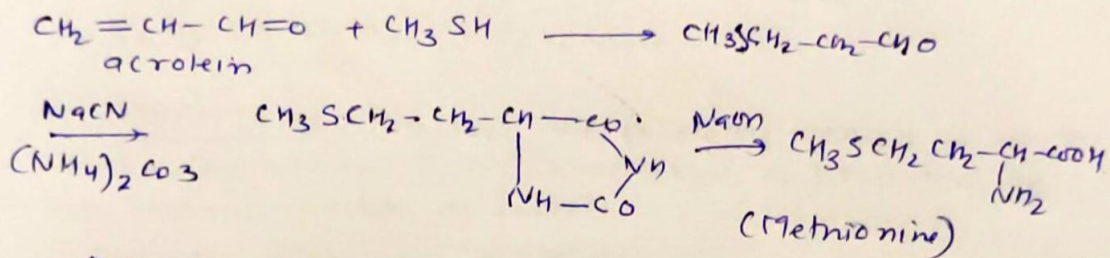


Another modification of the hydantoin synthesis is the Bücherer Hydantoin Synthesis. In this method an oxo compound like aldehyde, which is converted to 5-substituted hydantoin by

means of $(\text{NH}_4)_2\text{CO}_3$ and NaCN in aqueous ethanol solution followed by hydrolysis



The Best use of this method is the preparation of Methionine. Methionine is an essential amino acid and contains sulphur. Preparation of methionine:



Diketopiperazine Method Aromatic aldehydes may be condensed with diketopiperazine. The condensation product is treated with H_2 in presence of red phosphorus to give amino acids, phenylalanine, tyrosine and methionine is prepared by this method.

