

Synthesis and Characterization of α –Amino Acids

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ABSTRACT:

Hydrolysis of proteins boiling aqueous acid or base yields an assortment of small molecules identified as α –amino carboxylic acids. More than twenty such compound have been isolated & the most common of these are listed in the following table .those amino acids having green colored names are essential diet components. since there not synthesized by human metabolic processes. The best food source of these nutrients but it is important to recognize that not all proteins have equal nutritional blue.

KEYWORDS—natural-amino acids .synthesis .characterization .cytokine

INTRODUCTION:

Some common features of these amino acids should noted .with the exception of praline .they are all amines &with the exception glycogen. They are all choral. The configuration of choral amino acids are they same when written as a Fischer projection formula The R –substituent in this structure is the remaining structural component that varies from one amino acids to another & praline a three carbon chain that joins the nitrogen to the α carbon in a five mamboed ring .all these natural choral amino acids .with the exception of cytokine; have an s-configuration.

For the first seven compounds in the left column the R- substituent is a hydrocarbon. Last three groups, this is evident from a comparison of physical properties following table.

compound	formula	Molecular weight	Solubility In water	Solubility In ether	Melting point
Isobutyric Acid	$(\text{CH}_3)_2\text{CH}_2\text{CO}_2$	88	20gm/100ml	Complete	-47c
Lactic acid	$\text{CH}_2 \text{CH}(\text{OH})\text{CO}_2 \text{H}$	90	Complete	Complete	53 c
3-amino-2-	$\text{CH}_2 \text{CH}(\text{NH})\text{CH}(\text{OH})\text{CH}$	89	Complete	Complete	9 c
Butanol Alanine	$\text{CH}_2 \text{CH}(\text{NH})_2\text{CO}_2\text{H}$	89	10gm/100ml	insoluble	ca.300c

This table represented physical properties of selected acids & amiens;

REACTION OF α -AMINO ACIDS:

Amino acids undergo most of the chemical reaction characteristic of each function; assuming the p is adjusted to an appropriate value. Stratification of the carboxylic acid is usually conducted under acidic condition as shown in the equations. Under such conditions amine functions are converted to their ammonium salts & carboxylic acids are not dissociated. The initial product is a stable ammonium salt. The amino ester formed by neutralization of this salt is unstable. Due to acylation of the amine by the ester function, the second reaction illustrates benzoylation of the α carboxylic acid function of aspartic acid using p- toluene sulfonic acid as an acid catalyst .

SYNTHESIS OF α AMINO ACIDS:

Amination of α -bromocarboxylic acids illustrated by the following equation provides a straight forward method for preparing α amino carboxylic acids . The bromo acids. In turn are conveniently prepared from carboxylic acids by reaction with Br +Pcl .although this direct approach gave mediocre result when used to prepare simple amines from the alkyl halides .it is more for making amino acids .reduced nucleophilicity of the nitrogen atom in the product . Nevertheless, more complex procedures that give good yields of poor amino acids synthesis.

RESULT & DISCUSSION:

The α -amino acid derivatives may also be achieved by enzymatic discrimination in the hydrolysis of amides. For example, an amino acylase enzyme from pig kidneys leaves an amino derivative of a natural L -amino acid much faster than it does the D -enantiomer, racemic here. The diastereomeric species are transition states rather than isolable intermediates .this separation of enantiomers based on very different rates of reaction is called kinetic resolution.

OXIDATIVE COUPLING:

The mild oxidant iodine react selectively with chain amino certain amino acid side group. These include the phenolic ring tyrosine and the heterocyclic, rings in tryptophan and histidine, which yields product of electrophilic iodination. In addition the sulfur groups in cystine-cystine interconversion.

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