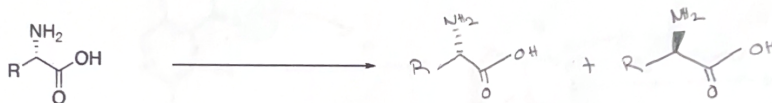


Your Name:

Imines are important biochemical functional groups that are utilized in several amino acid metabolizing enzymes that require Pyridoxal 5'-phosphate (PLP), a vitamin B6-derived cofactor. These enzymes are important especially in your brain as well as other organs. The enzymes work by forming a stable imine in the protein active site between a lysine residue and PLP.

1. (a) For each general type of transformation indicated below, indicate a specific PLP-dependent enzyme that will do each one. Then complete each scheme to show your peers the structure of the generic amino acid that would be expected after each transformation. Include an actual scientific literature reference for each. There are many scientific journals out there that can be referenced but the reference should be of an actual paper published within the last 5 years. Your reference should include: Journal Name, year, and First Author.

(i) Racemization



(iii) Decarboxylation



(i). Clin Biochem 2006, 39: 1112-1130

(iii) Eur. J. org. chem 2014, 6649-665

(iii). current advances on structure-function relationships of pyridoxal 5'-phosphate dependent enzymes, Jiang Wang, 2019.

(b) Choose one of your literature sources and write a very concise overview of the study. You don't need to get into all the technical aspects of the study but discuss what the goal of the study was, the significance of the study (why is it important?), and what the big picture conclusions of the study were. Make sure to include the reference of the paper you are writing a short synopsis for.

When you are doing your two peer reviews, ask two questions that were not answered from the synopsis you are reviewing. Then, ask for a response from these individuals that at least try to address the questions you have asked.

The study on the current advances on structure function relationships of pyridoxal 5' phosphate dependant enzymes, conducted by Jiang Liang & various other authors, aimed to elaborate on how the chemical steps for PLP mediated reactions are processed by enzymes, especially by functions of active site residues. The specific mechanism of an enzyme in relation to the one for a similar class of enzymes seems to be scarcely described or discussed. The study also

[O-]P(=O)([O-])C1=CN(C(=O)O)C=C1
 $\xrightarrow[\text{H}_2\text{N}-\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2-\text{Enzyme}]{\text{lysine residue}}$
[O-]P(=O)([O-])C1=CN(C(=O)O)C=C1N=CH-CH_2CH_2CH_2CH_2-Enzyme
 $+ \text{H}_2\text{O}$

PLP
 Internal Aldimine

