

Fig: - Outline of phenolic biosynthesis from phenylalanine onward

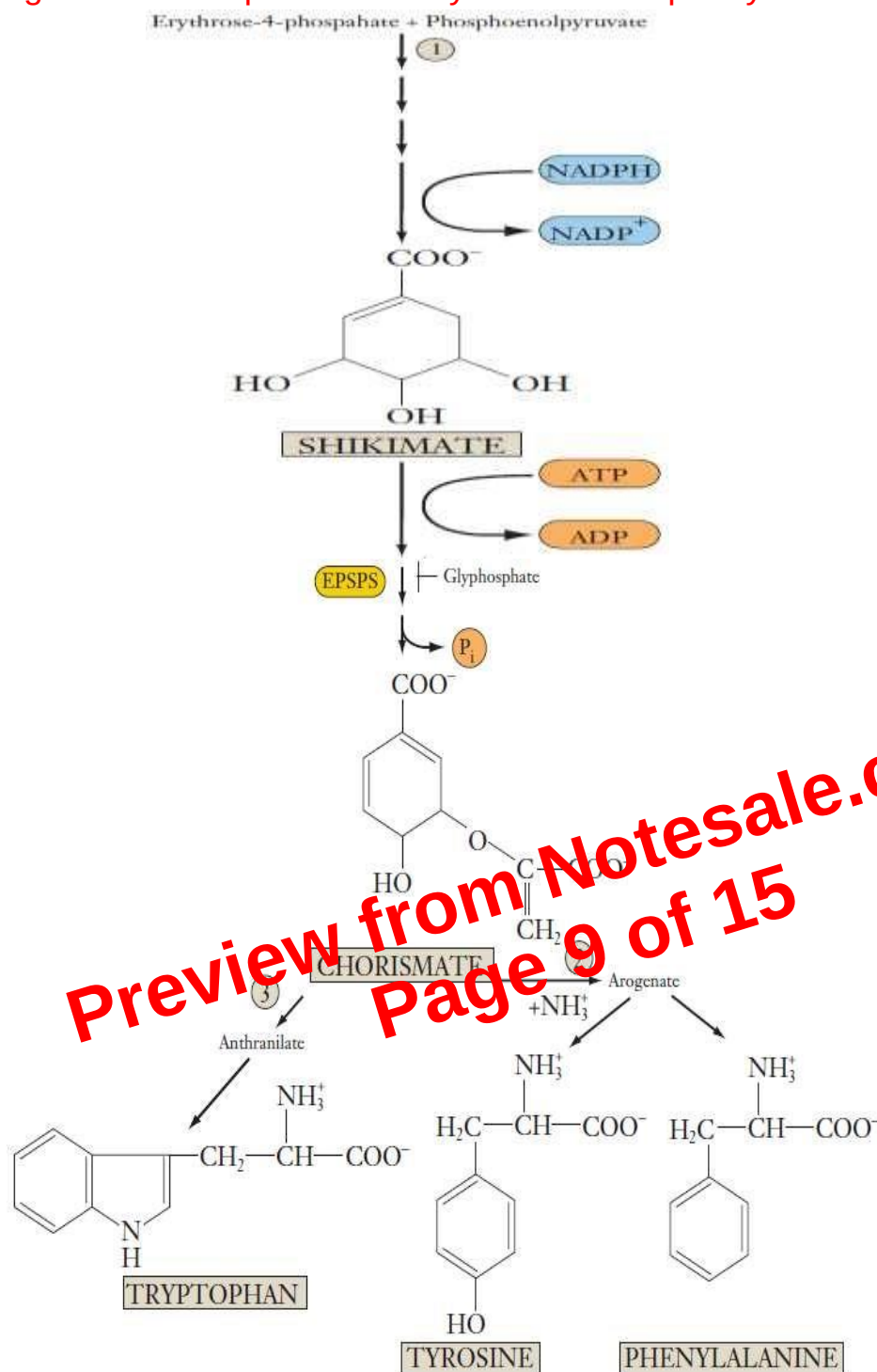


FIGURE :- The shikimic acid pathway for biosynthesis of aromatic amino acids in plants. Initial precursors are erythrose-4-P from the pentose-phosphate pathway and phosphoenolpyruvate from glycolysis. Enzymes indicated as 1, 2, and 3 are subject to feedback inhibition and thus are important regulatory enzymes in the pathway. Those enzymes are (1) 3-deoxyarabinoheptulosonate-7-phosphate synthase; (2) anthranilate synthase; (3) chorismate mutase. The enzyme EPSP synthase (EPSPS), which catalyzes the second of three reactions in the conversion of shikimate to chorismate, is inhibited by the herbicide glyphosate. Glyphosate thus prevents the synthesis of the amino acids tyrosine and phenylalanine.

(2012-JUNE, SET-A, Q-45)

4. Secondary metabolites are diverse array of organic compounds in plants. The following are certain statements about secondary metabolites:

- A. They protect plants against being eaten by herbivores and against being infected by microbial pathogens.
- B. Terpenes, the largest class of secondary metabolites are synthesized by methyl erythritol phosphate(MEP) pathway and shikimic acid pathway.
- C. The most abundant classes of phenolic compounds in plants are derived from phenylalanine.
- D. Alkaloids are nitrogen containing secondary metabolites in plants.

Which one of the following combinations of the above statements is correct?

- 1. A, B and C
- 2. B, C and D
- 3. A, C and D
- 4. A, B and D

(2013-DECEMBER, SET-A, Q-104)

103. Following are certain statements regarding secondary metabolites found in plants:

- A. All terpenes are derived from a six-carbon element.
- B. Alkaloids are nitrogen containing compounds.
- C. Pyrethroids, a monoterpene ester found in the leaves and flower of *Chrysanthemum* species, show insecticidal activity.
- D. Limonoids are groups of alkaloids and have antiherbivoral activity.

Which one of the following combinations of above statements is correct?

- 1. A and B
- 2. A and D
- 3. B and C
- 4. C and D

2014-DECEMBER