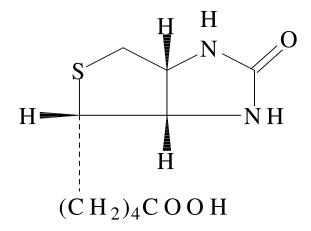
#### d-BIOTIN

Product Number **B4501** Storage Temperature 2-8 °C

CAS #: 58-85-5

Synonyms: Vitamin H, Coenzyme R, (+)-Biotin

# **Product Description**



Appearance: White powder Molecular formula:  $C_{10}H_{16}N_2O_3S$ 

Formula weight: 244.3 Melting point: 232-233 °C<sup>1</sup> Isoelectric point (pl) = 3.5<sup>1</sup>

Specific rotation: +89 to 93 (2% solution w/v in 0.1 N NaOH)<sup>2,3</sup> (1% solution: +91 in 0.1 N NaOH<sup>1</sup>)

Biotin is a growth factor present in minute amounts in every living cell. It plays a role in numerous naturally occurring reactions. It occurs mainly bound to proteins or polypeptides. Biotin combines with the protein avidin and becomes inactive. Extensive literature on biotinavidin technology has been discussed and summarized. The Kd is 1 x  $10^{-15}$  a very large constant for protein ligand interaction. This strong affinity of biotin for avidin (and the related proteins streptavidin and ExtrAvidin) is the basis for many of immunochemical applications.

Sigma offers several reagents sold individually or as part of kits with which to biotinylate or detect specific proteins (See kits BK-101, BK-200 and BB-PRO, for example). Methods for determining the degree of biotin substitution on proteins are reported. The HABA assay is used most often.

## **Preparation Instructions**

The maximum solubility in water has been cited as approximately 22 mg/100 ml at 25 °C, and in 95% alcohol as approximately 80 mg in 100 ml at 25 °C. Sigma obtains a clear colorless solution at 50 mg/ml in 2 M NH<sub>4</sub>OH. Biotin can be dissolved in dimethylformamide (DMF) at 1.7 mg/ml; 1 ml of this can then be added dropwise to 5 ml of phosphate buffered saline, pH 6.8. For cell culture purposes, either HCl or NaOH may be used to titrate biotin into solution. Biotin is stable at 100 °C in moderately acid or neutral aqueous solutions; the solutions can be heat-sterilized. Solutions above pH 9 are "less stable". Moderately acid and neutral solutions are stable several months.

### Storage/Stability

The product is stable stored at 2-8 °C for at least two years (no change detected by TLC chromatography in retained samples.)<sup>1,2</sup>

# References

- 1. Merck Index, 12th ed., #1272 (1996).
- 2. Sigma data.
- 3. U.S. Pharmacopoeia, 21, suppl. 6, p. 2542.
- 4. 4a. Methods in Enzymology, 184 (1990); entire volume.
  - 4b. Methods in Enzymology, 184, 3 (1990).
- 5. Methods in Enzymology, 18A, 418 (1970).
- 6. Data for Biochemical Research, 3rd ed., Dawson, R. et al., Eds. (Oxford Univ. Press, 1986) p. 118.

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