
Ascorbic acid and two of its derivatives are known to occur in mammalian tissues. These compounds are: (a) ascorbic acid (vitamin C), (b) L-ascorbic acid, and (c) D-gulonolactone. The latter two compounds are naturally occurring substances which are derived from ascorbic acid. D-Gulonolactone is the main metabolic product of ascorbic acid in the mammalian body. It is formed by the action of a specific enzyme, ascorbic acid oxidoreductase, which converts ascorbic acid to L-ascorbic acid. The reaction is written as follows:

\[ \text{D-gulonolactone} \rightarrow \text{L-ascorbic acid} + \text{H}_2\text{O} \]

This reaction is reversible, and the equilibrium lies far to the left under physiological conditions. The three compounds mentioned are all vitamin C equivalents, and they are interconvertible under physiological conditions. The metabolism of vitamin C has been extensively studied, and it is clear that the body is able to synthesize vitamin C from D-gulonolactone, whereas it cannot do so from other precursors. This is because D-gulonolactone is not a substrate for the enzyme ascorbic acid oxidoreductase.

In conclusion, vitamin C is a necessary nutrient for human health, and its metabolism is an important aspect of human nutrition. The study of vitamin C metabolism is crucial for understanding the role of this nutrient in the prevention of diseases such as scurvy.

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**References:**

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**Further Reading:**