

Enzymes and Coenzymes

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Enzymes and Coenzymes Latest News

The recent issue of Nature highlighted biofortified rice varieties, a major breakthrough from CAS, Beijing, under the title 'Gene-edited plants make the jump from farm to factory'.

About Enzymes

- **Enzymes** are **proteins** that catalyse biochemical reactions, enhancing the efficiency of **cellular metabolism**.
- Many enzymes require **helper molecules** for proper function. These are called **cofactors**, and when they are **organic molecules**, they are termed **coenzymes**.
- **Coenzymes** bind to enzymes and **support their activity**, playing a crucial role in various metabolic pathways.

What is Coenzyme Q (Ubiquinone)?

- **Coenzyme Q (CoQ)**, also known as **ubiquinone**, is an **organic antioxidant molecule** with multiple **isoprene units**.
- It exists in **ten different forms**, from **CoQ1 to CoQ10**, and is **lipid-soluble** but **water-insoluble**.
- Coenzyme Q is **vital for mitochondrial function** and is found in **every cell membrane**, where it aids **cellular energy production**.

Significance of CoQ9 in Plants

- **CoQ9**, containing **nine isoprene units**, is predominantly produced in **cereal crops** such as **wheat, rice, oats, barley, corn, rye, and millet**.
- It is also found in **bamboo, barley**, and **flowering plants** like **cinnamon, avocado, and pepper**.

Importance of CoQ10 in Human Health

- **CoQ10** is an **essential part of the mitochondrial electron transport chain**, generating the majority of the body's **cellular energy**.
- Organs like the **heart**, which have high **energy demands**, contain **high levels of CoQ10**.
- Although **CoQ9** is available in staple foods, **humans require additional CoQ10** due to **genetic factors, aging**, and **neurological disorders**.

Source: **TH**

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