

Oxidase

An **oxidase** is an enzyme that catalyzes an oxidation-reduction reaction, especially one involving dioxygen (O₂) as the electron acceptor. In reactions involving donation of a hydrogen atom, oxygen is reduced to water (H₂O) or hydrogen peroxide (H₂O₂). Some oxidation reactions, such as those involving monoamine oxidase or xanthine oxidase, typically do not involve free molecular oxygen.^{[1][2]}

The oxidases are a subclass of the oxidoreductases.

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Examples

An important example is cytochrome c oxidase, the key enzyme that allows the body to employ oxygen in the generation of energy and the final component of the electron transfer chain. Other examples are:

- Glucose oxidase
- Monoamine oxidase
- Cytochrome P450 oxidase
- NADPH oxidase
- Xanthine oxidase
- L-gulonolactone oxidase
- Laccase
- Lysyl oxidase
- Polyphenol oxidase
- Sulfhydryl oxidase. This enzyme oxidises thiol groups.

Oxidase test

In microbiology, the oxidase test is used as a phenotypic characteristic for the identification of bacterial strains; it determines whether a given bacterium produces cytochrome oxidases (and therefore utilizes oxygen with an electron transfer chain).

Oxidase test is used to determine whether a bacterium is an aerobe or anaerobe.

References

- Eric J. Toone (2006). *Advances in Enzymology and Related Areas of Molecular Biology, Protein Evolution* (https://books.google.com/books/about/Advances_in_Enzymology_and_Related_Areas.html?id=Pmh8yToeuloC) (Volume 75 ed.). Wiley-Interscience. ISBN 978-0471205036.
- Nicholas C. Price; Lewis Stevens (1999). *Fundamentals of Enzymology: The Cell and Molecular Biology of Catalytic Proteins* (https://books.google.com/books/about/Fundamentals_of_enzymology.html?id=8uvwAAAAMAAJ) (Third ed.). USA: Oxford University Press. ISBN 978-0198502296.

External links

- Catalase & Oxidase tests video (http://www.tgw1916.net/movies.html)
- Oxidase (https://meshb.nlm.nih.gov/record/ui?name=Oxidase) at the US National Library of Medicine Medical Subject Headings (MeSH)

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