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Laccase-
based

biosensors for detection of phenolic compounds (Review) (Open Access)

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Abstract

[View references \(147\)](#)

Monitoring of phenolic compounds in the food industry and for environmental and medical applications has become more relevant in recent years. Conventional methods for detection and quantification of these compounds, such as spectrophotometry and chromatography, are time consuming and expensive. However, laccase biosensors represent a fast method for on-line and in situ monitoring of these compounds. We discuss the main transduction principles. We divide the electrochemical principle into amperometric, voltammetric, potentiometric and conductometric sensors. We divide optical transducers into fluorescence and absorption. The amperometric transducer method is the most widely studied and used for laccase biosensors. Optical biosensors present higher sensitivity than the other biosensors. Laccase production is dominated by a few fungus genera: Trametes, Aspergillus, and Ganoderma. We present an overview of laccase biosensors used for the determination of phenolic compounds in industrial applications. © 2015 The Authors.

SciVal Topic Prominence

Topic: [Biosensors](#) | [Phenols](#) | [catechol CC](#)

Prominence percentile: 97.756

Reaxys Database Information

[View Compounds](#)

Author keywords

Absorption Amperometry Biosensor Electrochemical transducer Fluorescence Fungus Laccase
Optical transducer Phenol Transduction

Indexed keywords

Engineering controlled terms:

Absorption Bacteriophages Enzymes Fluorescence Fungi Medical applications
Phenols Transducers

Engineering uncontrolled terms

Amperometry Electrochemical transducers Laccases Optical transducers
Transduction

Engineering main heading:

Biosensors

EMTREE drug terms:

laccase phenol derivative

EMTREE medical terms:

absorption amperometric biosensor amperometry Aspergillus niger
Aspergillus oryzae biosensor Cerrena unicolor comparative study
conductometric biosensor conductometry fluorescence fungus Ganoderma
Ganoderma lucidium immobilization lifespan limit of detection
Myceliophthora thermophila nonhuman optical biosensor Pleurotus ostreatus
Polyporus pinsitus potentiometric biosensor potentiometry priority journal
response time Review Rigidoporus lignosus sensor thermal sensor
Toxicodendron vernicifluum Trametes hirsuta Trametes versicolor
voltammetric biosensor

Chemicals and CAS Registry Numbers:

laccase, 80498-15-3

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