

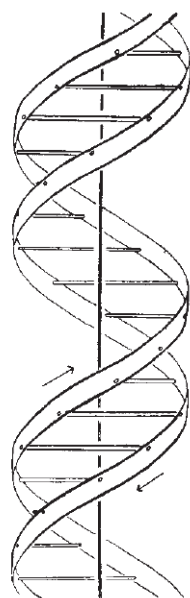
Introduction to scientific paper



MOLECULAR STRUCTURE OF NUCLEIC ACIDS

A Structure for Deoxyribose Nucleic Acid

WE wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.



It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material.

J. D. WATSON
F. H. C. CRICK

Structure of original scientific paper

Title

Abstract

Introduction

Experimental

Results &

Discussion

Conclusion

References

J. Agric. Food Chem. 2010, 58, 7141–7148 7141
DOI:10.1021/jf101173e

JOURNAL OF
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ARTICLE

An Integrated Amperometric Biosensor for the Determination of Lactose in Milk and Dairy Products

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An integrated amperometric biosensor for the determination of lactose is reported. The bioelectrode design is based on the use of a 3-mercaptopropionic acid (MPA) self-assembled monolayer (SAM)-modified gold electrode on which the enzymes β -galactosidase (β -Gal), glucose oxidase (GOD), peroxidase (HRP) and the mediator tetrathiafulvalene (TTF) are coimmobilized by a dialysis membrane. β -Gal catalyzes the hydrolysis of lactose, and the produced glucose is catalytically oxidized to gluconic acid and H_2O_2 , which is reduced in the presence of HRP. This enzyme reaction is mediated by TTF, and the reduction of TTF^+ at 0.00 V (vs Ag/AgCl) gives rise to an amperometric signal proportional to the lactose concentration. The biosensor exhibits a good repeatability of the measurement carried out with the same biosensor, a good reproducibility of the responses obtained with different biosensors and a useful lifetime of 28 days. A linear calibration plot was obtained for lactose over the 1.5×10^{-6} to 1.2×10^{-4} M concentration range, with a limit of detection of 4.6×10^{-7} M. The effect of potential interferents (sucrose, lactulose, fructose, arabinose, maltose, galactose, glucose and uric and ascorbic acids) on the biosensor response was evaluated. Furthermore, the bioelectrode exhibits a suitable performance in flow-injection systems in connection with amperometric detection. The developed biosensor was applied to the determination of lactose in milk and other foodstuffs (chocolate, butter, margarine, yogurt, cheese and mayonnaise), and the results obtained were validated by comparison with those provided by using a commercial enzyme test kit.

KEYWORDS: Self-assembled monolayers; enzyme electrodes; lactose; milk

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