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SYMPOSIUM

Review of Glucose Oxidases and Glucose Dehydrogenases: A Bird's Eye View of Glucose Sensing Enzymes

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Abstract

The evolution from first-generation through third-generation glucose sensors has witnessed the appearance of a number of very diverse oxidoreductases, which vary tremendously in terms of origin, structure, substrate specificity, cofactor used as primary electron acceptor, and acceptable final electron acceptor. This article summarizes our present knowledge of redox enzymes currently utilized in commercially available glucose monitoring systems to promote a fuller appreciation of enzymatic properties and principles employed in blood glucose monitoring to help avoid potential errors.

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Abbreviations: (FAD) flavin adenine dinucleotide, (GDH) glucose dehydrogenase, (GMC) glucose/methanol/choline, (GOx) glucose oxidase, (NAD) nicotine adenine dinucleotide, (NADP) nicotine adenine dinucleotide phosphate, (PQQ) pyrroloquinoline quinone, (SMBG) self-monitoring of blood glucose

Keywords: biosensing, glucose dehydrogenase, glucose oxidase, point-of-care testing, self-monitoring of blood glucose

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