

Alginate NiFe₂O₄ Nanoparticles Cryogel for Electrochemical Glucose Biosensor Development

Publons ID	50033652
Wos ID	WOS:000737612900001
Doi	10.3390/gels7040272
Title	Alginate NiFe ₂ O ₄ Nanoparticles Cryogel for Electrochemical Glucose Biosensor Development
First Author	
Last Author	
Authors	Fatoni, A; Wijonarko, A; Anggraeni, MD; Hermawan, D; Diastuti, H; Zufahair;
Publish Date	DEC 2021
Journal Name	GELS
Citation	
Abstract	Glucose biosensors based on porous material of alginate cryogel has been developed, and the cryogel provides a large surface area for enzyme immobilization. The alginate cryogel has been supplemented with NiFe ₂ O ₄ nanoparticles to improve the electron transfer for electrochemical detection. The fabrication parameters and operational conditions for the biosensor have also been optimized. The results showed that the optimum addition of NiFe ₂ O ₄ nanoparticles to the alginate solution was 0.03 g/mL. The optimum operational conditions for the electrochemical detection were a cyclic voltammetry scan rate of 0.11 V/s, buffer pH of 7.0, and buffer concentration of 150 mM. The fabricated alginate NiFe ₂ O ₄ nanoparticles cryogel-based glucose biosensor showed a linear response for glucose determination with a regression line of $y = 18.18x + 455.28$ and $R^2 = 0.98$. Furthermore, the calculated detection limit was 0.32 mM and the limit of quantification was 1.06 mM.
Publish Type	Journal
Publish Year	2021
Page Begin	(not set)
Page End	(not set)
Issn	
Eissn	2310-2861
Url	https://www.webofscience.com/wos/woscc/full-record/WOS:000737612900001
Author	Ners MEKAR DWI ANGGRAENI, M.Kep, Ph.D