

**ENZIMATICALLY MODIFIED PENICILLINE
BIOSENSOR**



**INSTITUT PENYELIDIKAN, PEMBANGUNAN DAN
PENGKOMERSILAN
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
MALAYSIA**

BY :

**ZAINIHARYATI MOHD ZAIN
MARINA MOKHTAR
WAN ZARINA WAN KAMARUDDIN**

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TABLE OF CONTENT

CONTENT	PAG E
Acknowledgement	ii
Table of content	iii
List of figure	vi
List of table	viii
Abstract	ix
Abstrak	x
CHAPTER 1 INTRODUCTION	1
1.1 Penicillin Biosensor	1
1.2 Potentiometry	3
1.3 Flow Injection Analysis	5
1.4 Objectives	7
CHAPTER 2 EXPERIMENTAL	8
2.1 Apparatus	8
2.2 Chemicals and reagents	9
2.3 Preparation of membranes	9
2.3.1 Triiodide membrane (membrane A)	9
2.3.2 Tridodecylamine membrane (membrane	9

B)

2.3.3	Penicillase coated pH electrode (membrane C)	9
2.4	FIA set up for each membrane system	10
2.4.1	FIA set up for membrane A (manifold A)	10
2.4.2	FIA set up for membrane B (manifold B)	11
2.4.3	FIA set up for membrane C (manifold C)	11
2.5	Optimization	12
2.5.1	Effect of triiodide concentration on the membrane electrode	12
2.5.2	Effect of carrier buffer pH	12
2.5.3	Effect of sample flow rate, sample volume and carrier flow rate.	13
2.5.4	Effect of penicillase reactor weight and incubation time	13
2.6	Analytical characteristic of the proposed method and comparison with FIA pH- electrode and FIA- biosensor	13
2.7	Sample analysis	13

CHAPTER 3 RESULTS AND DISCUSSION 14

3.1	Optimization	14
3.1.1	Effect of triiodide concentration on	14

2.3.3 Penicillase coated pH electrode

9

the membrane

3.1.2	Effect of carrier buffer pH	15
3.1.3	Effect of sample flow rate, sample volume and carrier flow rate	16
3.1.4	Effect of penicillase reactor weight and incubation time	18
3.2	Adopted parameters and its analytical characteristics	20
3.3	Sample analysis	23
CHAPTER 4 CONCLUSION		24
REFERENCES		25

ABSTRACT

A triiodide selective membrane electrode for the determination of penicillin in pharmaceutical formulation based on flow injection analysis (FIA) was developed. The principle of this system is based on classical iodometric penicillin assay, where the penicilloic acids resulted from enzymatic hydrolysis reaction were merged and reacted with triiodide solutions in the flow system. The excess triiodide was then detected by triiodide membrane detector. Under the adopted conditions, a sampling frequency of 75 samples per hour was obtained. The response was linear from 0.05 to 1.0 mmol L⁻¹ (n = 4) and detection limit of 0.0025 mmol L⁻¹. Good reproducibility (RSD±3.80 (n = 4)) was obtained for the determination of 0.5 mmol L⁻¹ penicillin G. The enzymatic reactor is stable for more than 2 months while the triiodide membrane remained functional despite being continuously pumped for 25 hours. Good agreement was obtained between the proposed method and manufacturer's claim values when applied to the analysis of pharmaceutical formulations.