NON DESTRUCTIVE GLUCOSE DETERMINATION IN PUDING BY BIOSENSOR

By:

Pipih Suptijah[1]

Agar or carageenan as the raw materiel of puding, contribute to the glucose content in form of non destructive glucose. The glucose content in food especilly fish Product or marine Product like "Puding", can determine by biosensor in form solid or solution sample. The glucose in puding may be reaction with oksigen in exits a specific enzyme, in this case is glucose-oxydase immobilize in triamine membrane as a catalyse of the raction between glucose and oxygen, to produce glucoronic acid and hydroperoxide. Non destructive glucose content in agar or carageenan, contribute to the total glucose in puding. The determination of non destructive glucose in puding by bio sensor base upon the use of enzyme glucose-oxydase to catalyse the following reaction.

$$\text{GLUCOSE+OXYGEN} \xrightarrow{\text{GLUCOSE-OXYDASE}} \text{GLUCONALAACTON+H2O2}$$

The product of the reaction is hydrogen peroxide may be determinde by potentiotically at a platinum electrode in exist the enzyme. This is the feature of amperometric enzyme electode wich can determine glucose concentration in sample solution or solid. So this method is very usable for electrochemical detrmination used enzyme immobilize in solution or solid sample. In example for determintion fish freshness, rancidity, micorbiological spoilage in fisheries product.

Material and Method

Materials: Oxygen Electode
Peristaltic Pump
syringe
Recorder
Resistans
Erlenmeyer
Plate
Beaker glass

Chemical: Agar
Carageenan
Buffer PBS pH7
Glucose-osidase
Triamin membran
Poly-urethanmembran
Glucose/dextrose
Aquades

Method:

Prepatarion of Enzyme immobilize:

One spatul glucose-oxidase enzyme in 2 ml buffer PBS (pH 7), immersing into triamin membrane for 3 hours minimum, at room temperature.

Preparation of Standard Curve:

	1	2	3	4	5
Agar	1.0 g	-	-	-	-
	1.5 g	-	-	-	-
	2.0 g	-	-	-	-
Water	100 ml	-	-	-	-
Glucose	5g	10 g	15 g	20 g	25 g

Sample 4 kind of row formula of puding
1 kind of coloum puding /instant.

[1] Staf Pengajar Jurusan Pengolahan Hasil Perikanan, Fakultas Perikanan IPB.

ISSN - 0854 - 9230

Buletin Teknologi Hasil Perikanan Vol. IV, No. 2, Th. 1997

Result

Condition of measuring

R = 1000 Ω

E = mu

I = μA

0. mμ/scale

I = $^{E}/_{R}$.

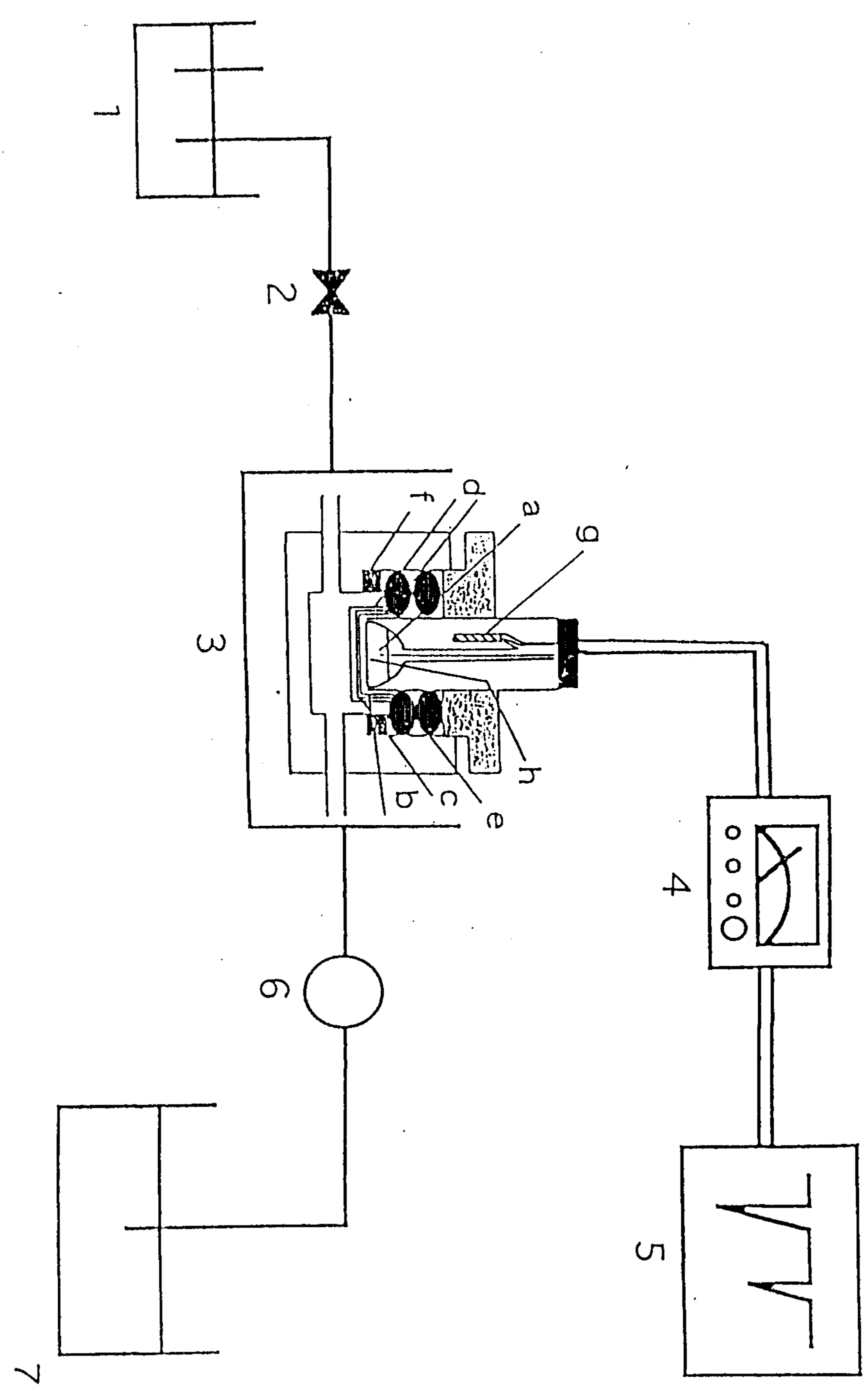
Glucose				
No	Formula		Sample	
			1 g agar	1.5 g agar
1	5 g/250	3,5 g/50 ml	7 %	7 %
2	80 g/450 ml	90 g/50	180 %	150 %
3	200 g /l	7 g/50	14 %	12 %
4	75 g/500	25 g/50	5 %	5 %
5	Cocount puding instant	1 g/50	2 %	2 %

Conclussion

Non destructive glucose in puding can determined by bio sensor methode using glucose-oxidase enzyme, immersing into triamine membrane. The concentration of non destructive glucose in some puding is different depend on type of material and formula of the puding in example there is three type of material puding, agar carageenan and gelatne this report shwowed that sample number 1, 3, 4, 5 have low concentration of non destructive gucose in puding it mean high caloris content. and sample no. 2 have high concentration of non destructive glucose it mean low caloris content.

ISSN 0854 - 9230

Gambar 1.



ISSN - 0854 - 9230

Gambar 2

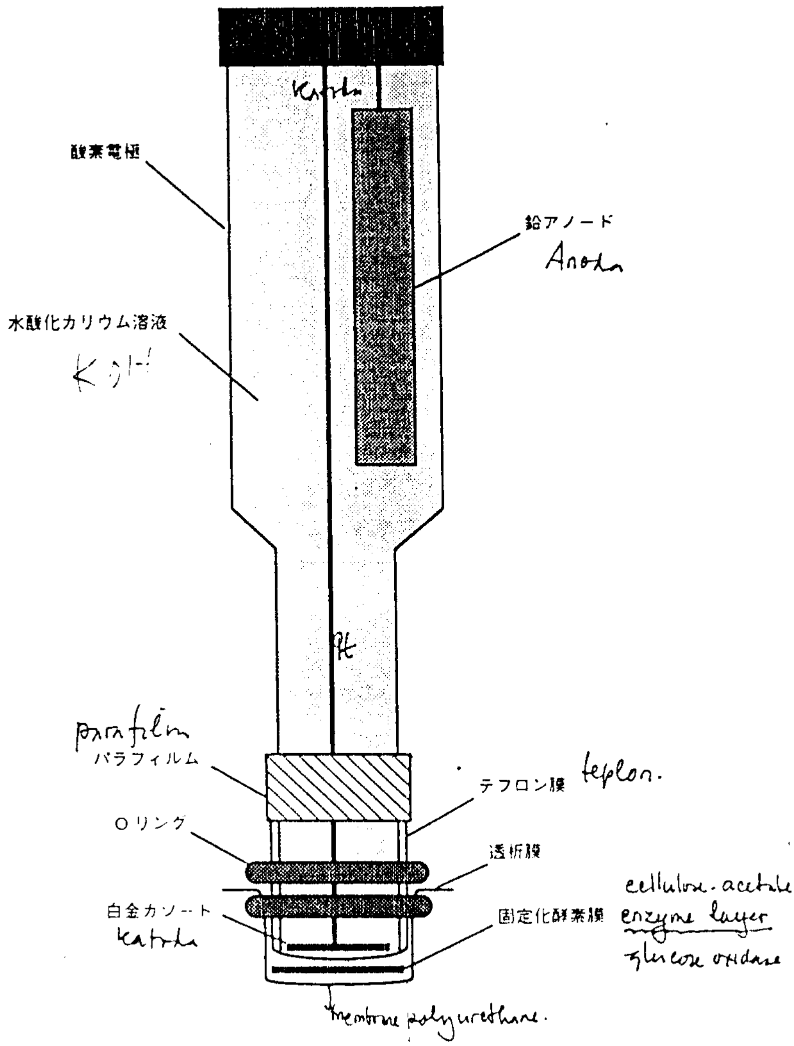


図 2-1 酵素電極