

## Development of Urea Biosensor Based on Immobilized Urease in Chitosan Cryogel

<b>Title</b>	Development of Urea Biosensor Based on Immobilized Urease in Chitosan Cryogel
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<b>Abstract</b>	<p>The development of biosensors using biological components has an important role in detecting the disease early because it has good selectivity and accuracy. In this study, a biosensor which made is a urea biosensor, based on immobilization urease in chitosan using adsorption techniques, to measure urea levels by colorimetric analysis with bromothymol blue (BTB) as an indicator. The purpose of this study was to find out how to measure urea levels using biosensors based on urease immobilization in chitosan and find out the biosensor performance including optimum enzymatic reaction time, linearity, the limit of detection, repetition, and determination of disrupting compounds. The study began with the making of an immobilization supporting matrix using chitosan which was made in the form of cryogel through an ionic gelation process which adsorbs the urease enzyme. Cryogel urease catalyzes the hydrolysis of urea into <math>\text{NH}_4^+</math> and <math>\text{CO}_2^-</math>. The reaction product was added with the BTB indicator, and the color change formed was measured using a spectrophotometer. The results showed that the performance of urea biosensors was good enough for urea level detection systems by producing enzymatic reaction times at 15 minutes, linearity at 0.9951, detection limit at 0.018 mM, not affected by the addition of 0.05 mM ascorbic acid and 0.4 mM uric acid. This urea biosensor can be used up to 5 repetitions.</p>
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