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## **DEVELOPMENT OF UREA BIOSENSOR BY USING NEW ENZYME-POLYMER CONJUGATES**

### **Abstract:**

In this study, ureaz- polymer (dextran) covalent conjugates were synthesized whose resistance was increased against high temperature. Firstly dextran aldehyde derivative was synthesized and enzyme-polymer conjugates with different molar were synthesized using enzyme. The obtained conjugates were examined with GPC system and FTIR spectroscopy.

Activities of synthesized conjugates and free enzyme at different temperatures and pH values are determined and results are compared. The conjugates showed lower activity compared to purified enzyme in all temperatures and pHs. However, the conjugates against increasing temperatures showed greater activity values when it is compared to free enzyme. The conjugate displayed quite well thermal stability against high temperatures.

In this study, the development of a urea sensitive biosensor has been purposed by using micro sized potentiometric ammonium sensitive composite membrane sensor. The enzyme is used to immobilize for composite ammonium sensor membrane surface or inside while biosensor is being prepared. The urea-sensitive biosensor does not include inner reference electrode and inner reference solution. The biosensor is thought to be more suitable to make stable readings for a long time and to be used for continuous measurement systems. Potentiometric performance of biosensor were examined with a computer-controlled measurement system designated. (This study was supported by grant from the TÜBİTAK research fund (Project number: 114Z138)).

### **Keywords:**

Enzyme stabilization, enzyme immobilization, enzyme polymer conjugation, urea, dextran, biosensor, activity

**JEL Classification:** C93, I11, O30