

### Immobilization of bovin serum albumin on a cellulose via periodate oxidation

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Paper-based biosensors are widely used in many areas such as point-of-care test because they are affordable and portable. For reproducible quantitative analysis, it is important to fix biomolecules to the biosensor. Conventional techniques rely on physical adsorption, which can be easily removed by weak physical forces. Thus, it is difficult to obtain reproducibility as a result of the analysis of biosensor using physical adsorption. To overcome the limitation, this study presented a method of oxidation method of cellulose to covalently bind bovin serum albumin(BSA) on paper. This method consists of three processes: oxidation of paper, the formation of Schiff base, and reduction of paper. FT-IR analysis was used to qualitatively analyze the formed aldehyde groups and imine bonds. The characteristic absorption peaks are indicated that imine groups and aldehyde groups have been successfully introduced into cellulose. Thus, we demonstrate a simple method to immobilize biomolecules such as enzymes and antibodies. We expect this immobilization method to increase the reproducibility of quantitative detection for commercialization of paper-based sensors.