

Synthesis of Polyclonal Antibodies against Aflatoxin

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Abstrak

Polyclonal antibodies of aflatoxin B1 were successfully produced from New Zealand White female rabbits after immunization by the hapten of aflatoxin B1-carboxymethyl hydroxylamine hemihydrochloride (AFB1-CMO) conjugated with bovine serum albumin (BSA) as the antigen. The hapten was synthesized using the carbodiimide method with CMO as a linker. Absorption peaks at 362, 264, and 218 nm were observed as a result of characterization with UV-Vis spectroscopy, while IR spectroscopy showed peaks at 3448 cm⁻¹ and 1642 cm⁻¹ attributable to the hydroxyl and nitrile groups, respectively. Furthermore, mass spectrometry showed fragmentation at the m/z of 386, 368.2, and 310, which confirms that the hapten of AFB1-CMO was successfully synthesized. The hapten was then conjugated with BSA to serve as an antigen of AFB1 when it was injected into the rabbits. The specificity of the antigen towards its antibody and the confirmation of hapten-BSA conjugation were characterized using the dot blot immunoassay, which showed a BSA concentration of 1.74 mg/mL. Two weeks after the primary immunization by its antigen, agar gel precipitation testing showed that the rabbit blood serum had positive results for polyclonal antibodies against AFB1 with the highest concentration of antibodies of 2.19 mg/mL.