

## Synthesis of polyclonal antibodies against aflatoxin b1

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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<sup>-1</sup> and 1642 cm<sup>-1</sup> 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 antibodiest

against AFB1 with the highest concentration of antibodiest of 2.19 mg/mL.

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Sintesa of Poliklonal Antibodi Aflatoxin B1. Antibodi poliklonal aflatoksin B1 telah berhasil diproduksi pada hewan

uji kelinci betina New Zealand White setelah diimunisasi dengan hapten aflatoksin B1-carboxymethyl hydroxylamine

hemihydrochloride (AFB1-CMO) yang dikonjugasikan dengan bovin serum albumin (BSA) sebagai antigen. Hapten

AFB1 disintesis menggunakan metode karbodiimida dengan CMO sebagai linker. Puncak absorbansi pada 362, 264,

218 nm teramat sebagai hasil karakterisasi menggunakan spektrofotometer UV-Visibel, sementara dengan spektrum IR

diperoleh puncak pada 3448.126 cm<sup>-1</sup> dan 1642.451 cm<sup>-1</sup> yang masing-masing mengindikasikan adanya gugus hidroksil

dan nitril. Hasil spektrometri massa menunjukkan fragmentasi pada m/z 386, 368.2, dan 310 yang membuktikan hapten

AFB1-CMO telah berhasil disintesis. Hapten ini kemudian dikonjugasikan dengan BSA agar dapat berperan sebagai

antigen AFB1 ketika diinjeksikan pada kelinci. Kekhususan antigen aflatoksin B1 terhadap antibodinya dan konfirmasi

konjugat hapten-BSA menunjukkan hasil positif pada uji dot blot immunoassay dengan konsentrasi BSA sebesar 1.74

mg/mL. Dua pekan setelah imunisasi primer, agar gel precipitation test menunjukkan hasil positif terhadap antibodi

poliklonal AFB1 dengan konsentrasi tertinggi sebesar 2.19 mg/mL.