

CATATAN SINGKAT

Oxydative desulfuration of [¹⁴C]-fenitrothion by liver microsomes of some species of fishes

[Oksidasi desulfurasi [¹⁴C]-fenitrothion pada mikrosom liver dari beberapa spesies ikan]

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Diterima: 9 Februari 2011; Disetujui: 5 April 2011

Abstract

A study was made of the oxydative desulfuration of [¹⁴C]-fenitrothion by liver microsomes of some species of fishes. The preliminary research had been carried out to obtain the optimal condition of fenitrothion assay of the liver microsomes of every test spesies, including : pH, temperature, pre incubation time, incubation time, trypsin inhibitor, NADH and NADPH effect. The hepatic microsomes of treated and control were subjected to fenitrothion oxydative desulfuration assay, protein and cytochrome P-450 content and another enzyme activities.

Key words: cytochrome P-450, enzyme activities, fenitrothion, oxydative desulfuration, fishes, microsomes, protein.

Abstrak

Suatu studi telah dilakukan tentang oksidasi desulfurasi dari [¹⁴C]-fenitrothion yang berlangsung pada mikrosom liver dari beberapa spesies ikan. Penelitian pendahuluan telah dilakukan untuk mengetahui kondisi optimum pada suatu uji fenitrothion yang berlangsung pada liver dari spesies uji meliputi beberapa parameter seperti: pH, suhu, waktu pra-inkubasi, waktu inkubasi, inhibitor tripsin, serta pengaruh dari NADH dan NADPH. Mikrosom liver dari kontrol dan perlakuan telah digunakan pada uji oksidasi desulfurasi fenitrothion untuk mendeterminasi kandungan protein dan sitokrom P-450.

Kata penting: aktivitas enzim, fenitrothion, ikan, mikrosom, oksidasi desulfurasi, protein, sitokrom P-450.

Introduction

One of the most important roles of the fish liver is to detoxicate various foreign compounds which could exert toxicity to animals. The liver takes in these compounds from the portal vein and oxidized many of them to more polar metabolites, which are further metabolized by epoxide hydrate and/or conjugating enzyme to water soluble metabolites to be excreted out of the fish body safely and rapidly (Lumban Batu, 1991).

Liver microsomal cytochrome P-450 is a key enzyme which participates in the initial step of this detoxication process, and it was expected that the fish microsomes had a function of the oxydation of drugs (Lumban Batu, 1992).

The organophosphorous compounds one major group insectisides, and a certain portion there of may be transported to the aquatic environment resulting either from the actual use on paddy fields or from the unavoidable transmittance to waterways.

Fenitrothion [Sumithion, 0,0-dimethyl O-(3-methyl 4- nitrophenyl) phosphorothioate is a broad-spectrum insecticide used extensively throughtout the world for the control of agricultural and forest pest, and since it is rather highly toxic to some aquatic organism.

By the introduction of a methyl group to methyl parathion of the m – position in the benzene ring, the toxicity of product, i.e. fenitrothion