

## Tracer pathway dari insektisida malathion dan pengaruhnya terhadap organ hati dan otak tikus / Razak Achmad Hamzah

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### Abstrak

Penelitian ini bertujuan untuk mengetahui jalur (pathway) dari insektisida malathion dari lingkungan akuatik (air) ke tumbuhan akuatik atau hewan akuatik di sekitarnya, kemudian dari hewan akuatik ke mammalia darat (tikus) dengan menggunakan malathion yang telah diberi label (malathion radioisotope  $^{14}\text{C}$ ). Penelitian tingkat pertama, akan dicari jalur perjalanan malathion dari lingkungan perairan ke tumbuhan air (yaitu *Hydrilla verticillata*) dan hewan akuatik (yaitu ikan mas). Kemudian pada penelitian tingkat ke dua akan dilihat jalur perjalanan malathion dari hewan akuatik (ikan mas) ke mammalia darat (tikus). Penelitian tingkat ketiga, akan dipantau pengaruh negatif dari pencemaran insektisida malathion 96 EC pada sayuran di Indonesia, terhadap organ tikus (hati dan otak). Hasil yang didapat dari semua hewan perlakuan dibandingkan dengan kontrol dengan menggunakan uji-t Student. Hasil penelitian memperlihatkan bahwa residu insektisida malathion di perairan dapat diserap oleh tumbuhan air dan dapat memasuki tubuh dan atau organ hewan akuatik atau melalui mata rantai makanan, dan masuk secara langsung melalui insang, sisik, kulit. Residu malathion juga dapat masuk ke dalam tubuh mammalia darat (tikus) melalui matarantai makanan, yaitu dengan konsumsi ikan atau tumbuhan air yang terkontaminasi. Penelitian ini juga membuktikan bahwa dosis pencemaran insektisida malathion pada sayuran di Indonesia, bila dikonsumsi selama 60 hari berturut-turut dapat menimbulkan kerusakan yang nyata pada hati, tetapi tidak secara nyata menimbulkan kerusakan pada otak tikus.

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This

research was aimed to settle on the pathway of insecticide contamination in the aquatic environment forwarding toward aquatic plants and animals by using radioisotope  $^{14}\text{C}$  labelled malathion. Then by using the same labelled malathion, its pathway to the mammals, i.e. mice, was also determined. The first step of the research was aimed to detect

the pathway

of malathion residues in water moving toward aquatic plants i.e. *Hydrilla verticillata* and aquatic animals i.e. fishes.

Subsequently, in the second step of the research, the pathway of this labelled malathion from aquatic animals (fish) to

mammals (mice). Then, in the third step of this research, the influence of polluting dose of malathion 96 EC, which was

frequently found in vegetables in Indonesia, on the mammals' organ i.e. liver and brain of mice. All of the treatments?

results were compared to the controls? using Student t-test. Analysis of the results showed that the residual insecticide

can be absorbed by the aquatic plants and then entered the fish body through food chain, and also through the gills, skin,

scales. Furthermore, it was substantiated that the mammals obtained residual malathion through its food chain, that is,

when the fishes were eaten by the mice or other mammals. The concentration of the insecticide observed, malathion,

absorbed by water plants, fish organ and mice organ found to be different. This study also proved that the concentration

dose of malathion found in vegetables in Indonesia can cause abnormality in the livers of the mice, if it was taken

consecutively for 60 days. It was also shown in this study that the brains of the treated mice did not show any

significant abnormality.