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HAK MILIK  
PERPUSTAKAAN KUSTEM

**A HEMATOLOGICAL STUDY OF ENDOSULFAN INSECTICIDE ON SWAMP  
EEL (*Monopterus albus*)**

**Lee Mun Yee**

**This project report is submitted in partial fulfillment of the requirement of the  
degree of Bachelor of Applied Science (Fisheries Science)**

**FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA**

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## ABSTRACT

A hematological study on the effects of endosulfan insecticide on swamp eel (*Monopterus albus*) was undertaken. *Monopterus albus* was exposed to endosulfan at different concentration of 0.05, 0.10, 0.40, 0.70 and 1.00  $\mu\text{g.L}^{-1}$  for 96 hours. 96 hours  $\text{LC}_{50}$  of the *Monopterus albus* was  $0.42 \pm 0.05 \mu\text{g.L}^{-1}$ . *Monopterus albus* was sub-sampled daily for hematological determinations during the experiment. The hematological changes on *Monopterus albus* after 96 hours of endosulfan exposure were investigated. The hematological parameters included the morphology and number of red blood cell, white blood cell, volume of hemoglobin, hematocrit and total plasma protein in the *Monopterus albus*. The hematological findings indicated that endosulfan produced a decrease in hematological parameters compared to the control of *Monopterus albus*. Clear symptoms of anemia were indicated by lower red blood cells and white blood cells, hemoglobin, hematocrit, and total plasma protein content. The anemia was caused by blood loss through the gill capillary and hematemesis and could be considered as hemorrhagic. The findings of this study indicate that *Monopterus albus* useful as a bio-indicator for endosulfan pollution in the aquatic environment.

## ABSTRAK

Kajian hematologikal atas belut (*Monopterus albus*) selepas didedahkan kepada racun serangga endosulfan telah dijalankan. *Monopterus albus* telah didedahkan kepada endosulfan kepekatan berbeza pada 0.05, 0.10, 0.40, 0.70 dan 1.00 $\mu\text{g.L}^{-1}$  selama 96 jam.  $\text{LC}_{50}$  dalam 96 jam bagi belut ialah  $0.42 \pm 0.05\mu\text{g.L}^{-1}$ . *Monopterus albus* telah disubsampel setiap hari bagi penentuan kajian hematologikal sewaktu pendedahan kepada endosulfan. Kesan perubahan hematologikal pada *Monopterus albus* selepas 96 jam telah dikaji. Parameter hematologikal melibatkan morfologi dan bilangan sel darah merah, sel darah putih, kuantiti hemoglobin, hematokrit dan jumlah protin plasma dalam *Monopterus albus*. Endosulfan telah menyebabkan penurunan nilai parameter hematologikal bagi belut yang didedahkan kepada endosulfan berbanding dengan belut kawalan. Tanda anemia yang jelas telah ditunjukkan oleh pengurangan sel darah merah, sel darah putih, hemoglobin, hematokrit dan jumlah protin plasma. Anemia adalah disebabkan oleh kehilangan darah melalui kapilari insang dan hematemesis dan ini boleh dikatakan sebagai hemorrhagic. Penemuan dalam kajian ini menunjukkan *Monopterus albus* mungkin berguna sebagai penunjuk biologi bagi pencemaran endosulfan dalam persekitaran akuatik.