

## **ACUTE ORAL POISONING OF A HERBICIDE PRODUCT CONTAINING PROPANIL AND BUTACHLOR**

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**Background:** Propanil and butachlor combination product is a widely used herbicide in Thailand. Propanil is an anilide used for selective post-emergence weed control of grass and broadleaf weeds whereas butachlor is a member of chloroacetanilide class used as a pre-emergence control. Among these herbicides, propanil is a common cause of methemoglobinemia from oral exposure. However, there is still limited information about this mixture product poisoning.

**Objective:** To characterise the clinical presentation and outcomes of human exposure of a combination product containing propanil and butachlor herbicide.

**Method:** We retrospectively analysed data from 1st January 2007 through 30th June 2012. Patients exposed to a mixture of propanil and butachlor were consulted to Ramathibodi Poison Center.

**Results:** A total 396 patients took either propanil or butachlor. There were 47% (186 cases) who took the combination of propanil and butachlor, 8% propanil, 23% butachlor, 18% mixture of propanil with other substances and 4% butachlor with others. Most exposures were intentional ingestion (94%). The medical outcomes were no effect (13%), minor effect (58%), moderate effect (17%), major effect (3%), and death (8%). The median hospital stays of minor, moderate and severe groups were 2, 4 and 9 days, respectively. The median time to death was 5 days. Methemoglobinemia occurred in 81%, whereas haemolysis was found in 29% of severe cases. All surviving cases had methemoglobinemia and were treated with methylene blue. In the mortality cases, 4 cases died within 24 to 48 hours after exposure. They developed loss of consciousness, shock (3 cases), methemoglobinemia (3 cases), respiratory failure and cardiac arrest. The other 9 cases died on the 3rd to 7th day, though methemoglobinemia and/or haemolysis had been treated. Two cases died on the 5th and 22nd day. At the terminal time, they demonstrated loss of consciousness in the absence of methemoglobinemia and/or haemolysis.

**Conclusions:** Most cases of combined propanil and butachlor poisoning were mild. However, the mortality rate was relatively high. Coma, methemoglobinemia, haemolysis, cardiac dysrhythmia were found in severe cases. Most of the mortal cases developed recurrent or prolonged methemoglobinemia, haemolysis and severe metabolic acidosis. The mechanism of death in severe poisoning awaits elucidation.