

P7: NEUTRALIZING EFFECTS OF N-ACETYL-CYSTEINE AGAINST COBRA (*NAJA NAJA KAOUTHIA*) VENOM.

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ABSTRACT

Snakebite is a serious medical problem worldwide. In Thailand each year thousands of individuals are bitten and hundred die. The cobra (*Naja naja kaouthia*) induces the highest mortality rate. The most toxic compounds in cobra venom are neurotoxins. Neurotoxins are affecting to the neuromuscular junction and causing flaccid paralysis. N-Acetylcysteine (NAC) is the mucolytic agent that could destroy disulfide bond of protein and glycoprotein. As the cobra neurotoxins are a polypeptide chain cross-linking by disulfide bonds, thus, it is very interesting to test whether NAC could neutralize cobra venom since disulfide bond is important for the activity of snake neurotoxins.

The NAC (Fluimucil) was tested both *in vitro* and *in vivo* for antivenom activity against *Naja naja kaouthia* venom. The NAC has been found to have a significant ($p < 0.05$) antagonistic effect on the inhibition of neuromuscular transmission produced by the venom in isolated rat phrenic nerve hemidiaphragm preparations. Mice, intraperitoneally injected with cobra venom at 0.75 mg/kg had the survival time of 21.90 ± 2.96 min, while mixing with the NAC to 75 or 150 mg/kg just before injected resulted in an increase of survival time significantly ($p < 0.05$) to 40.83 ± 4.36 min and 53.83 ± 8.50 min, respectively. Preincubation of the cobra venom with NAC, at 75 or 150 mg/kg, at 37 °C for 1 h could significant ($p < 0.05$) increase survival time of the animal to 45.57 ± 5.50 min and 91.67 ± 14.96 min, respectively. The present finding suggests that the NAC have the antagonistic effect against the lethality of cobra venom both on *in vitro* and *in vivo* models.

Key words: N-acetylcysteine, Cobra venom, *Naja naja kaouthia*