RISK ASSESSMENT OF INSECTICIDE PREPARATION TIGUVON® IN DOGS

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Fenthion (Tiguvon®, Bayer AG) is an effective insecticidal compound with a residual effect for the control of fleas in dogs and cats. Fenthion belongs to the organophosphorus group of compounds, which are inhibitors of cholinesterases and have a systemic effect. This effect can be observed within 4 hours after application.

The effect on cholinesterase blood levels (both in plasma and erythrocytes) in dogs following treatment with Tiguvon® (fenthion) was studied. The aim of the work was to determine the possible risk of acute inhibition of acetylcholinesterase (AChE) and butyrylcholinesterase (BuChE) in dog after application of therapeutic and higher doses of Tiguvon®.

Fifteen German shepherd dogs of either sex and varying ages were allocated at random to 3 groups of equal size. Treatment regimes (single doses) were:

1. group - fenthion (Tiguvon®) - 15 mg/kg topically on day 1 (therapeutic dose)
2. group - fenthion (Tiguvon®) - 22.5 mg/kg - 1,5 times higher dose than therapeutic dose
3. group - fenthion (Tiguvon®) - 30 mg/kg - 2 times higher dose than therapeutic one

Cholinesterase activity both in plasma and erythrocytes was measured before and after treatment(s). The plasma cholinesterase (butyrylcholinesterase) was measured by spectrophotometer according the Boehringer Maunheim test. The activity of acetylcholinesterase in red cells was measured by the method described by Mitchel.

The activity of butyryl (= plasma) cholinesterase in first group - the decrease (63%) was significant on day 5 of experiment, the similar results were obtained also in groups 2. and 3.

In the erythrocytes a significant decrease of acetylcholinesterase from 1.2 DpH/hour to 0.9 DpH/ /hour was determined in group 1. on days 3, 4, 6 and 8, in group 2. from 0.936 DpH/hour to 0.665 DpH/ hour on day 4 and in last group from 0.95 DpH/hour to 0.670 DpH/hour already on day 2 and than the values were slowly increased up to normal.

We can conclude that insecticide Tiguvon® in therapeutic or 1.5 and 2 times higher doses does not produce a significant risk inhibition of acetylcholinesterase and butyrylcholinesterase which would be presented by typical clinical symptoms.

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