

Thesis Title The Effects of DDT on Cholinergic
 Muscarinic Responses

Name Thitiya Pung

Degree Master of Science (Toxicology)

Thesis Supervisory Committee

 Jutamaad Satayavivad, Ph.D.

 Yupin Sanvarinda, Ph.D.

 Udom Chantharaksri, Ph.D.

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ABSTRACT

DDT is still widely used in several countries. Its major toxic effects are on the nervous system. Since there are few studies concerning the chronic effects of DDT on autonomic functions, therefore it is necessary to find out more information, especially those controlling the heart and respiratory tract. DDT 5 mg/kg, 5 days/week, was administered orally to 4-weeks-old rats for 1,3,5,7,9,11,13, and 15 weeks, while control groups received corn oil in comparable amounts. At the end of each treatment schedule, the responses of atrial and tracheal muscarinic receptors to acetylcholine, and the responses of atrial beta-adrenergic receptors to norepinephrine, were detected. Chronic exposure to DDT at this dose for varying time intervals up to 15 weeks did not alter body weight, percent haematocrit, and serum glucose levels of the treated rats. Chronic DDT-treated rats exhibited the alteration of serum cholinesterase activity. Aging and DDT did not alter the beta-adrenergic responses to norepinephrine. The atrial muscarinic responses to acetylcholine were altered in DDT-treated

rats. Both increased and decreased responses were observed depending on the duration of exposure to DDT. The influence of DDT on the cholinergic functions in aged groups was different from the younger groups. In control groups, the tracheal muscarinic responses to acetylcholine decreased as the age of rats increased. Chronic exposure to DDT 5 mg/kg significantly increased tracheal muscarinic responses especially following long periods of treatment (11,13 and 15 weeks).

The results of this study indicated that chronic exposure to DDT can induce the alteration in cholinergic functions. Hypersensitivity of cardiac and tracheal muscarinic responses to acetylcholine were observed following 15 weeks exposure to low doses of DDT.