

3936693 PYBS/M : MAJOR : BIOPHARMACEUTICAL SCIENCES ; M.Sc.
(BIOPHARMACEUTICAL SCIENCES)

KEY WORDS : GARLIC/ PENTOXIFYLLINE/ LEARNING/ BEHAVIOR
PIRIN YUENNAN : EFFECTS OF RAW GARLIC ON LEARNING BEHAVIOR
IN RATS. THESIS ADVISORS : NONGLUCK SOOKVANICHSILP; Dr.Phm.Sc.,
CHONGKOL TIANGDA; Dr.rer.nat. 70 p. ISBN 974-663-443-7

The effects of garlic (*Allium sativum* Linn.) on learning behavior were evaluated in male rats (7-8 months old, weighing 250-400 gm) by comparison to the effects of pentoxifylline, a hemorheological agent with antiplatelet activity. The test was designated as experiment A and experiment B both conducted in two consecutive 4 week sessions. In experiment A, the rats performed in learning maze model during the first 4 weeks then followed by moving along the endless rope model for another 4 weeks. In experiment B, the rats were first tested a rotarod machine for 4 weeks and then a step down test model for another 4 weeks. Each experiment consisted of 4 groups with 6-8 rats per group. Aqueous garlic homogenate at doses of 1 and 2 gm (of raw garlic)/kg/day were given orally to group 1 and group 2, respectively, while pentoxifylline suspension at a dose of 200 mg/kg/day was given to group 3. Group 4 served as the control group and was given water. All tests (maze model, endless rope model, rotarod model and step down model) were performed 3 times a week. The number of successful tasks and the acquisition time in one week intervals were used for the statistical analysis.

In experiment A, there were no significant differences (at $p = 0.05$) in the numbers of success and acquisition time in the learning maze model when the results of week 1 to week 4 from all treated groups were compared with the control. The numbers of success in moving along the endless rope model during weeks 3-4 (which were weeks 7-8 of the treatment) found rats treated with garlic at a dose of 1 gm/kg and pentoxifylline at a dose of 200 mg/kg were significantly higher than those found in the control group. Garlic at a lower dose (1 gm/kg) also produced a longer acquisition time throughout the 4-week period compared to the control with a significant difference at week 4 (which was week 8 of the treatment). In experiment B, there was no significant benefit of either garlic or pentoxifylline on the numbers of success in the rotarod machine when the results from all treated groups were compared correspondingly with the control group. However, a trend of increasing acquisition time at week 3 and week 4 compared to the control could be demonstrated in the 1 gm/kg garlic group. Garlic at a lower dose trended to produce in week 3 to week 4 higher numbers of success in the step down test compared to the control group and significant improvement at week 4 (which were weeks 7 and 8 of the treatment). These findings may provide some evidence to support the beneficial effect of long-term garlic consumption on learning behavior.