

EFFECT OF COUMATETRALYL BAITS ON WARFARIN-RESISTANT AND SUSCEPTIBLE COLONIES OF ROOF RAT, *RATTUS RATTUS*

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Abstract Papers discussing the rodenticidal effect of coumatetralyl on warfarin-resistant colonies of roof rat has not been published so far in Japan. The authors discussed the effects of bait formulation of coumatetralyl on warfarin-resistant and susceptible roof rat and the urban, wild roof rats caught in Shinjuku Ward, Tokyo Metropolis, Japan.

Coumatetralyl 99.9% technical and warfarin 98.0% technical were formulated to an 0.025 and 0.0375% toxic bait with commercially available flour mix. When the 0.025% and 0.0375% toxic baits of coumatetralyl were given respectively to the warfarin-resistant roof rat, there was a significant difference ($P < 0.05$) in mortality and the bait intake between the two test groups. The average mortality in days is 16.2 days and 18.8 days, respectively, in males and females and the mortality rate is 83.3% and 44.4% respectively in the 0.025% toxic bait group of coumatetralyl. Those are 11.9 days and 13.0 days respectively in males and females and the mortality rate is 100% and 80.0% respectively in the 0.0375% toxic bait group of coumatetralyl. With an increase in coumatetralyl concentration, the effect was substantial even to the warfarin-resistant group.

When the 0.025% and 0.0375% toxic baits of coumatetralyl were given to the warfarin-susceptible group, there was no significant difference in mortality and the bait intake.

The average mortality in days is 5.3 days and 6.6 days respectively in males and females and the mortality rate is 100% and 100% respectively in the 0.025% toxic bait group of coumatetralyl. Those are 6.1 days and 5.8 days respectively in males and females and the mortality rate is 100% and 100% respectively in the 0.0375% toxic bait group of coumatetralyl. It was not essential to increase the coumatetralyl concentration in case of the warfarin-susceptible roof rat and coumatetralyl was effective at low concentrations.

When the 0.025% toxic bait of coumatetralyl was given to the urban, wild rats caught in Shinjuku Ward, Tokyo Metropolis, the results were similar to that of the 0.025% test group of warfarin-resistant rat in terms of mortality and the bait intake. The average mortality in days is 16.0 days and 14.3 days respectively in males and females and the mortality rate is 66.7% and 66.7% respectively. It was proven that those rats still exhibited high resistance to warfarin.

In conclusion, it was proven from this study that coumatetralyl showed better efficacy on warfarin-resistant roof rats than that of warfarin at the same concentration.