



**CONTROL OF SOME RODENTS BY NEW
ADOPTED TECHNIQUES IN FAYOUM
GOVERNORATE**

By

Mohammed Ahmed Hassan Abdel Hamed El-Deeb

B. Sc. in Agriculture Science, Fac. of Agric., Cairo Univ., Fayoum Branch, 2003

M. Sc. In Agriculture Science (Pesticides), Fac. of Agric., Fayoum Univ., 2009

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Abstract

PART I: Population fluctuation of commensal rodent species in Fayoum governorate.

The rodents collected from three deferent areas in each district (to be a representative samples) by total account 2566 rodents as follow: the major rodent species all over the two years of both districts was *Rattus rattus* (58.96%) followed by *Mus musculus* (25.95%), and *R. norvegicus*. (15.08%).

The most destructive rodent species under field study was found to be *Rattus rattus* followed by *Mus musculus*. While *Rattus norvegicus* is of less economic injurious effect in Fayoum governorate.

PART II: Isolation and identification the related ectoparasites.

In 2012-2013, the study of rodent ectoparasites density showed that the high density of ectoparasites was observed in autumn (42.15%) followed by spring (26.54%) and summer (19.5%) while the lowest population was recorded during winter (11.81%).

Five species of fleas *Xenopsylla cheopis*, *Leptopsylla segnis*, *Pulex irritans*, *Echidnophaga gallinacean* and *Ctenocephalides felis* two species of mites (*Ornithonyssus bacoti* and *Dermanyssus gallinae*) and one species of lice, *Polyplax spinulosa*, were also collected from the body surface of certain rodent species.

PART 3: Assessment of 4 rodent control techniques.

The reduction of rodent by using spring wire traps was obtained by 18.96%, Supercaid® bait 55.06%, Zinc phoshide 80%, while, Brodifacoum indicated that the superior efficacy was obtained by 93.3%.

PART3: Joint action between pesticide (Bromadiolone) and acetyl salicylic acid (2-acetyloxy benzoic acid) to potentiate the rodenticidal effect against *Rattus rattus* in laboratory conditions:

Depend on field remarkable that Bromadiolone (second generation anticoagulant) hasn't have accepted effect in rodents control, that may be due to the resistance formed by the wild rats.

It was found that *R. rattus* is high tolerant to bromadiolone (the rats need to 28 days to achieve 100% died) although it's a second generation one dose anticoagulant like Brodifacoum (achieve 100% dead rats in 5 days) that the rat show no tolerant at all.

When we added 2% of acetyl salicylic acid (Asprine) on the traditional Super Caid 0.005%®, the time in take to achieve 100% of rat reduction by 78.57% in just only 6 days.

Aspirin act as a motive material for Bromadiolone (anticoagulant) rapid the bio effect of Bromadiolone in liver of rates.

Part 4: Histological and hematological studies on *Rattus rattus* :

In the histology of treated animals, Liver with random foci of hemorrhage associated with disruption of hepatic parenchyma, Lung hemorrhage compressing airways, Spleen with hemorrhage evident outside of its capsule and Kidney exhibited necrosis, degeneration and accumulation of toxic metabolic debris in the renal glomerular and tubular cortex region. In *R. rattus* after 96- 120 hrs exposure to anticoagulant rodenticide bromadiolone + **2% acetyl salicylic acid**, showed the presence of blood in the urine, this may be due to necrosis and degeneration of renal cortex as seen in the histological preparations.

Key words: Ecological studies – *Rattus rattus* –*Mus musculus* – *Rattus norvegicus* – Bromadiolone – Aspirin – Histological and Haematological studies