



ARC • LNR

Plant Protection Research Institute

SUPPLEMENTARY REPORT

An *in vitro* study to test for possible deterioration of the effectiveness of F10 Germicidal Wound Spray to control *Lucilia cuprina* eggs.

Dr J.A. Kelly

6 December 2006

Senior Researcher, Entomology
Agricultural Research Council
Plant Protection Research Institute
Private Bag X134
Queenswood
0121
Tel: (012) 304-9593
Fax: (012) 325-6998

KellyJ@arc.agric.za

Client: Health and Hygiene
P.O. Box 347
Sunninghill
2157
Tel: (011) 474-1668
Fax: (011) 474-1670


J A Kelly

Objective:

This study supplements previous studies done by Dr J.A. Kelly and Prof. T.C. van der Linde. The objective of those studies was two-fold to evaluate the efficacy of two F10 Germicidal formulations with insecticide against *Lucilia cuprina* larvae in an *in vitro* study, and secondly, to determine if there was any deterioration in the efficiency of F10 Germicidal Wound Spray with Insecticide against *L. cuprina* larvae, after the formula has been stored for prolonged periods of time and at various temperatures. The aim of the present study was to determine if the Germicidal formulations with insecticide had any effect on the eggs of *L. cuprina*.

Study design, procedures, assessments and analyses:

The study design, procedures, assessments and analyses were amended for this study. The parasites used were still *L. cuprina* (Diptera: Calliphoridae). These flies are a veterinary pest, causing myiasis on domestic animals.

Adult *L. cuprina* were raised in a colony, where they were given a constant supply of water and sucrose solution. They were fed on chicken liver to provide a protein source. After 24 hours, the liver was replaced with fresh liver to provide a medium on which the females could lay their eggs. The liver was provided at night and any eggs that were laid during the night were treated early in the morning before they hatched.

This process was repeated 5 times to provide enough eggs for each treatment. The liver and the eggs were treated / sprayed as a unit. No attempt was made to remove the eggs from the liver as this could damage the eggs and provide a false result. After the treatment was applied, the eggs were left for 6 days to ensure that any hatching events were recorded. It was assumed that due to warmer weather experienced at the time, the eggs were not viable after this period. This was based on observations made during the previous experiments during which the eggs hatched within 3 days after they were laid.

There were 5 treatments:

- 1) F10-Germicidal Wound Spray with Insecticide. "Batch 080917 Initial" (21/11/2006).
- 2) F10 Germicidal Wound Spray with Insecticide. "Batch 262 Room Temperature, One Year." (22/11/2006).
- 3) F10 Germicidal Wound Spray with Insecticide. "Batch 262 37⁰C One Year" (23/11/2006)

4) F10-Germicidal Wound Spray with Insecticide. "Batch 080713. 54⁰C 2 Weeks"
(26/11/2006)

5) The control, where no wound spray was applied (27/11/2006).

(All samples of the F10 Germicidal Wound Spray with Insecticide were supplied by Health and Hygiene (Pty) Ltd. P.O. Box 347, Sunninghill, 2154. Active Ingredients of Quaternary & Biguanide compounds: 0.44%. Cypermethrin: 0.25%, Piperonyl Butoxide: 1.25%.)

The F10 Germicidal Wound Spray was administered by using standard spray canisters. The experimental units (container with approximately 50 grams of liver and egg batches) were sprayed only once while ensuring there was a good cover of the spray over the whole surface. The treated units were then placed in plastic basins with mesh lids for observation.

Because of the relatively small data set and unquestionable results, the data were not tested statistically.

Results and Discussion:

None of the treated eggs hatched in any of the treatments where the F10 Germicidal Wound Spray was applied. The control eggs hatched within 24 hours after being laid. Only 8% of the egg masses were not viable. This percentage was expected as the control unit was the last one given to the *L. cuprina* colony. The females in the colony were at the end of their laying cycle and only a few eggs were laid on the liver given to them the next day to maintain the colony.

These results showed that F10 Germicidal Wound Spray with Insecticide was extremely effective with 100% mortality of the eggs. It should be noted that the experimental egg batches were of average sizes. However, in the field, the egg batches may be larger, which may influence the effectiveness of the Germicidal Wound Spray. These results showed that the F10 Germicidal Wound Spray with Insecticide does not appear to be affected significantly by temperature or time.