ovarian cell lines by application of some ecdysteroids.

It can be said from the present experiment that an insect ovarian cell line produces a considerable amount of α-glucosidase and β-N-acetylglucosaminidase. In this connection, however, a possibility that the zymogen in the fetal bovine serum is activated by insect cells and exhibits the enzyme activity, cannot be excluded. Further experiments will be necessary to resolve this problem.

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The Intracellular Yeastlike Symbiotes of *Laodelphax striatellus* Fallén (Homoptera: Delphacidae) Strains Resistant and Susceptible to Malathion[1,2]

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Many insect species possess internal flora of microorganisms (Buchner, 1965). An intracellular symbiote found in *Laodelphax striatellus* Fallén has been reported to play an important role at least in supplying sufficient sterol for the development of *L. striatellus* (Noda and Saito, 1979 b). It was reported that the lengths of individual symbiotes and the number of these per unit area in ultra thin sections of mycetomes did not differ significantly from strains of *Myzus persicae* Sulz. resistant and susceptible to demeton-*S*-methyl (Ball and Bailey, 1978). On the other hand, contrary observations were reported in strains of *M. persicae* susceptible and resistant to parathion (Amiressami and Petzold, 1976/1977). In this paper the relationship between the intracellular yeastlike symbiote and malathion resistance of *L. striatellus* was studied.

L. striatellus, collected at Kitashirakawa, Kyoto in 1965, was reared on rice seedlings at 25°C under a 16-hr light, 8-hr dark cycle. This population was used as a susceptible (S) strain. The malathion resistant (Rm) strain was obtained by selecting the S strain with malathion (Ozaki and Kassai, 1971). Heat treatment was conducted by the exposure of insect after hatching to 35°C for 3 days to obtain *L. striatellus* populations with a small number of the yeastlike symbiotes (Noda and Saito, 1979 a). The number of the yeastlike symbiotes was counted by means of a Thoma's hemocytometer (Noda, 1974). Susceptibility of *L. striatellus* to malathion was measured by means of a dry film method (Ozaki and Kassai, 1971). LD_{50} values were calculated according to Bliss (1935). *In vitro* degradation of ^{14}C-methyl malathion by *L. striatellus* homogenates was studied by incubating ^{14}C-methyl malathion with the homogenates at 37°C for 30 min (Miyata et al., 1976).

The results are shown in Table 1. The Rm strain showed a higher resistance level to malathion than the S strain. *In vitro* ^{14}C-methyl malathion degradation activity was also higher in the Rm strain than in the S strain as reported previously (Miyata et al., 1976). There was no significant difference in the number of the yeastlike symbiotes between the S and the Rm strains.

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Table 1. LD_{50} values, *in vitro* degradation activity of ^{14}C-methyl malathion and the number of the yeastlike symbiotes in *Laodelphax striatellus* FALLÉN

Strain	LD_{50} values of malathion (μg/test tube)	Malathion degradation (μmole/g/hr)	No. of the yeastlike symbiotes per nymph
S	0.050 (0.043–0.059)[a]	0.125±0.011[b]	160,500±22,900[b]
S-*t*	0.095 (0.078–0.116)	0.142±0.012	4,724± 927
Rm	32.3 (26.7– 39.2)	5.73 ±0.49	175,000±12,300
Rm-*t*	41.5 (32.9– 52.2)	6.14 ±0.58	4,213± 402

[a] Values in parentheses indicate 95% confidence intervals.
[b] Mean±SD.

The heat treatment resulted in the significant decrease in the number of the yeastlike symbiotes in both heat treated S and Rm (S-*t* and Rm-*t*) strains. No significant difference in the number was observed between the S-*t* and the Rm-*t* strains. However, the Rm-*t* strain still retained higher resistance level to malathion than the S-*t* strain after heat treatment. *In vitro* ^{14}C-methyl malathion degradation activity was also higher in the Rm-*t* strain than in the S-*t* strain. Both heat treated strains were slightly less sensitive to malathion than their original S and Rm strains, respectively.

The number of the yeastlike symbiotes in *L. striatellus* did not correlate with malathion toxicity or malathion degradation. Therefore, the intracellular yeastlike symbiotes in *L. striatellus* did not seem to be important in malathion resistance of *L. striatellus*.

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ERRATUM

APPLIED ENTOMOLOGY AND ZOOLOGY Vol. 18, No. 3, August 1983, on line 29 of the contents on cover 1.

"Kuniasu SIMIZU" should read "Kuniatu SIMIZU."