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Neral (the Alarm Pheromone) Biosynthesis *via* the Mevalonate Pathway, Evidenced by D-Glucose-1-^{13}C Feeding in *Carpoglyphus lactis* and ^{13}C Incorporation into Other Opisthonotal Gland Exudates

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Abstract:
The monoterpene neral [(*Z*)-3,7-dimethyl-2,6-octadienal], an alarm pheromone, has been identified as a major component of the opisthonotal gland exudates of *Carpoglyphus lactis*, together with tridecane and (*Z*,*Z*)-6,9-heptadecadiene. The $CDCl_3$ extract of mites fed D-glucose-1-^{13}C for 30 days was found to have ^{13}C atoms at positions 2, 4, 6 and 8–10 by ^{13}C-NMR analysis. The compound neral was, therefore, concluded to be produced *via* the mevalonate pathway from 2-^{13}C-acetyl-CoA by glycolysis. After seven days of feeding on D-glucose-1-^{13}C, at least one ^{13}C atom was incorporated in 51.6% of neral molecules. Likewise, 51.8% of tridecane, 42.5% of (*Z*,*Z*)-6,9-heptadecadiene, 39.5% of γ-acaridial and 33.4% of neryl formate, were also labeled, while squalene was not labeled, indicative of its origin, the culture medium.

Keywords:
mevalonate pathway, Astigmata, biosynthesis of neral, D-glucose-1-^{13}C, *Carpoglyphus lactis*, alarm pheromone

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