

tained in rats suggest that the reduction in cholesterolemia may be secondary to a decrease in the intestinal absorption of exogenous and endogenous cholesterol and an increase in the excretion of bile acids. However, balance studies in humans are necessary to determine whether the mechanisms in rats and humans are comparable. The intestinal effects may be related to the inhibition of cholesterol absorption by alfalfa saponins<sup>8,11</sup> and to adsorption of bile acids to alfalfa fibre<sup>12</sup> with a consequent increase in their

excretion. Moreover, additional hypocholesterolemic mechanisms associated with the minor dietary changes necessitated in our volunteers for conservation of constant body weight cannot be ruled out. The observations reported here suggest that the addition of alfalfa seeds to an habitual diet may prove useful in the treatment of hypercholesterolemic patients, but a larger number of volunteers should be followed for longer periods before this addition is recommended.

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## Resilin in the cuticle of physogastric queen termites

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**Summary.** Resilin is present in the endocuticle of the flexible abdominal intersegmental cuticle of the physogastric queen of the termite, *Odontotermes obesus* (Rambur). Resilin seems to assist in the extension of abdomen of the queen termites during physogastry.

A characteristic feature of the physogastric queens of the tropical mound-building species of termites is the enormous growth (about 50-fold) of the abdomen after fertilization<sup>3</sup>. This is due to the increase in growth of visceral organs, and de novo development of abdominal tracheal glands and ovaries. During the extension of abdomen in the physogastric phase, the soft intersegmental membranes of the abdominal region grow and extend enormously<sup>4</sup>. Observations which we have recently made on the extended soft intersegmental membranes of the abdominal region of the physogastric queens of the mound-building termite, *Odontotermes obesus* (Rambur) indicate the presence of the structural elastic protein, resilin in the endocuticle which may assist in the elongation of abdomen during physogastric phase.

The soft intersegmental cuticle of the queen of *Odontotermes* comprises an outer epicuticle and inner endocuticle<sup>4</sup>. Histological preparations of the cuticle stained with toluidine blue/light green combination at pH 4-7 colours the endocuticle sapphire. In addition, the endocuticle swells considerably in phenol, formamide, formic acid, lithium thiocyanate and cupric ethylenediamine<sup>5,6</sup>.

Chromatographic analysis for amino-acids of the intersegmental cuticle following the methods used by Bailey and Weis-Fogh<sup>7</sup> showed the presence of 2 fluorescent amino-acids (di-tyrosine and tri-tyrosine) at R<sub>f</sub> 0.05 and 0.18 respectively, in addition to the usual amino acid constituents of the soft intersegmental cuticle of insects<sup>4</sup>. The fluorescence of these 2 amino-acids increased when the chromatogram was exposed to ammonia vapour, whereas

vapour from hydrochloric acid quenched it almost completely.

Examination of the frozen sections of the soft intersegmental cuticle with fluorescence microscope (Carl Zeiss) showed that at neutral pH the outer half of the endocuticular region fluoresced blue with a maximum intensity at about 420 nm. In alkali media it fluoresced a brighter blue. The foregoing observations, especially the presence of di- and tri-tyrosine as well as auto-fluorescence of the endocuticle provide characteristic evidence for the occurrence of resilin in the endocuticle of the soft intersegmental cuticle of the extended abdominal region of the physogastric queen of the termite, *Odontotermes*. It is suggestive that the resilin may impart elasticity to the cuticle necessary for the extension of abdomen during the physogastric phase.

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