On the Release of the Three Locust (*Locusta migratoria*) Adipokinetic Hormones: Effect of Crustacean Cardioactive Peptide and Inhibition by Sugars

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An existing test to monitor the rate of adipokinetic hormone release from the corpora cardiaca (CC) of *Locusta migratoria in vitro* was improved, so that a constant basal rate of release was achieved and the amount of released Lom-AKH-I, II and III could be quantified by HPLC. This test system was subsequently used to demonstrate that a small peptide, which has been found in a few insect species including *L. migratoria*, crustacean cardioactive peptide (CCAP), induces release of all three AKHs. Moreover, 80 mM trehalose reduces CCAP-induced release of AKHs *in vitro*, and 160 mM glucose reduces this release even further. Glucose also had a greater inhibitory effect than trehalose on the spontaneous release and inhibited the high potassium-stimulated release of AKH from the CC *in vitro*. Eighty mM sucrose, on the other hand, had no effect on the release of AKH. The effect of trehalose and glucose could be due to their use as an energy source, with trehalose first having to be converted to glucose. Whatever the stimulus, the three AKHs are released in the same proportions as they are found in the CC, which *in vivo* would make Lom-AKH-I, the most abundant AKH, the major effector of the biological effects of AKHs in adult locusts.

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