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### Mosquito Repellency of DEET Analogues Determined by a New Assay Using Blood Substitute

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Diseases that are mosquito borne are still a major mortality factor in many countries in Asia and Africa. One way of preventing these fatal diseases is to use mosquito repellents like DEET. However, the toxicity profile of DEET necessitates the development of a new repellent. Five analogues of DEET have been synthesized and screened for their repellency against *Aedes aegypti* using a newly developed *in vitro* assay. The new assay makes use of an artificial blood substitute consisting of various proteins, salts and ATP, in association with a collagen membrane and disposable hot pack heated open glass tube feeder. This *in vitro* assay has been validated with DEET and Icaridin and has been proven as a valuable tool for fast and efficient screening of possible mosquito repellents. The repellency of the compounds tested linearly correlated with their log P values as well as their skin permeation profiles.

**Key words:** Mosquito, Repellent, DEET, *Aedes aegypti*

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### Internal Structure Change of Shoot Induced by Simulated Acid Rain in *Arabidopsis thaliana*

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This experiment was carried out to investigate the internal structure change of shoot induced by simulated acid rain (SAR) in *Arabidopsis thaliana*. In the shoot growth, the plants treated with SAR (pH 3.0) for 15 days showed no morphological change compared to the control plants. Some change was observed in the internal structure of the stems: the epidermis and cortex tissues of the stems treated with SAR were partly damaged. The plants treated with SAR showed no noticeable difference compared to the control plants, but morphological changes were observed in the leaf. The leaves of the plants treated with SAR showed many white necrotic spots on the part of upper epidermis. A light microscopic examination of the leaves with necrotic spots showed that the upper epidermis was severely compressed with the damaged cuticle layer and the mesophyll cells were also damaged and compressed. However, noticeable structural change of vascular bundle cells was not observed.

**Key words:** *Arabidopsis thaliana*, Simulated acid rain, Morphology, Internal structure