

## Simultaneous synthesis of *n*-alkanes and *n*-alkanoic acids in tropical angiosperms.

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The hydrogen isotope ( $\delta D$ ) of plant leaf-wax compounds (*n*-alkanes and *n*-alkanoic acids) preserved in sedimentary archives is widely used for paleo-precipitation reconstruction. The differences in the time of synthesis of these compounds has bearing on assessing the seasonality in reconstructed paleo-precipitation variability. In temperate and sub-tropical regions, it has been observed that *n*-alkanes are synthesized during the early growing season whereas *n*-alkanoic acids are formed throughout the growing season implying the early growing season biasness in sedimentary leaf wax  $\delta D$  records of the former. However, the seasonality in the production of leaf wax *n*-alkanes and *n*-alkanoic acids from tropical regions with strong monsoonal precipitation regimes is not understood. To address this issue we conducted a six-month-long experiment with three deciduous (*Tectona grandis*, *Haldina cordifolia*, *Sterculia urens*) and four evergreen (*Memecylon umbellatum*, *Callophylum inophyllum*, *Syzygium cumini* and *Diospyrus malabarica*) tropical angiosperms. To understand the replacement of leaf wax compounds in mature leaves, the plants were irrigated with isotopically distinct water i.e. initial 85 days with normal water ( $\delta D = -1.8\text{‰}$ ) followed by deuterium labelled water ( $\delta D = 1000\text{‰}$ ) for 110 days. The  $\delta D$  values of *n*-alkanes and *n*-alkanoic acids of mature leaves from two individuals per species were measured. An individual of some of the species showed enriched  $\delta D$  values of the leaf wax compounds while the other of the same species did not. In general, the species experimented with showed no to partial replacement of *n*-alkanes and *n*-alkanoic acids in the later part of the growing season suggesting biasness in the bulk synthesis of these compounds towards the early growing season. Further, we observed synchronous variation in  $\delta D$  values of these compounds confirming their simultaneous synthesis in tropical angiosperms.