Verifying the Chemical Characterization and Botanical Origin of Burmese Ambers by C13 NMR Spectroscopy

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Examining the structure of amber could provide information about the climate of ancient times, the evolution of tree species and continental drift. In this study solid-state C13 NMR spectroscopy was used to determine the chemical and botanical origin of Burmese amber. Research regarding the structure of this particular amber is limited and has presented ambiguous results, thus the paleobotanical origin has not been concluded. This is frequently mentioned as a problem since Hukawng Valley can potentially be the first amber deposit to contain amber from two separate plant families. To determine from which paleobotanical origin the Burmese amber originates, several samples of Burmese amber from Hukawng Valley were analyzed in this study. The result of the study showed a strong indication of a widespread Group A occurrence: five ambers produced clear spectra of Group A, while one sample produced a spectrum of an uncertain group. As a consequence of the unique southerly location of the amber deposit, this further demonstrates a wider distributed worldwide occurrence of Group A ambers. The deviant sample indicates a newly discovered paleobotanical source. However, as the spectrum contained Group D characteristics it could also imply a more extensive Group D occurrence worldwide, as this group has only been found in Africa, Latin America and the Caribbean previously. If indeed this sample originates from Myanmar, it suggests that one additional plant family was the source of Burmese amber.

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