

**(GS11) Forensic palynology**

**Date:** August 28

**Place:** Room 6326 (poster)

Poster Presentation

Aug. 28 [PM1]

13:30-14:30

GS11-P01 (346)

**Palynological analyses of spider webs and their potential in forensic science to associate a suspect/victim with a crime scene: First report from India**

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The application of palynology to forensic investigations relies on the similarity of palynomorph assemblages from forensic items, such as spider webs adhered to the clothes/hairs of a suspect or a victim with a crime scene. Spider webs are known to be potential natural traps for small leaves, flowers, insect parts and airborne spores and pollen grains of a particular area. These are not clearly visible, sticky and catch almost all airborne particles. *In situ* webs (webs at their place of origin) were collected from populated and forested areas of Lothian Island (Sundarbans, West Bengal), Murshidabad (West Bengal) and Gangtok (Sikkim) of India. Webs adhered to the clothes and hairs of two volunteers (*volunteer-1* who started from Lothian Island and after reaching Murshidabad exposed himself to the spider web rich sites and came back to Lothian Island; *volunteer-2* travelled from Murshidabad to Gangtok and exercised the same as *Volunteer-1* and finally returned back to Murshidabad) were also collected for palynomorph study. The rationale was to check the potential of spider webs as pollen trap to associate objects or persons (victim/ suspect) with a particular place. Pollen grains of *Aegiceras* sp., *Porteresia* sp., *Sonneratia apetala*, *Acanthus ilicifolius*, *Phoenix* sp., *Clerodendron* sp., *Avicennia* sp., *Xylocarpus* sp., *Azadirachta indica*, *Tamarindus* sp., *Heliotropium* sp., *Sarcolobus* sp. and *Tamarix* sp. were recovered from webs (*In situ*) of Lothian Island showing swampy mangrove vegetation and pollen grains of Poaceae type, *Cocos nucifera*, *Alstonia* sp., *Mangifera indica*, *Coriandrum* sp., Chenopods, *Salmalia* sp., *Borassus flabellifer*, *Brassica* sp., *Psidium guajava*, *Parthenium* sp. were retrieved from webs (*In situ* and webs from *Volunteer-1*) of Murshidabad showing tropical evergreen vegetation. On the contrary *Alnus nepalensis*, *Athyrium* sp., *Davallia* sp., *Arthromeris* sp., *Erigeron* sp., *Tithonia* sp., *Michelia* sp., *Pinus* sp., *Drynaria* sp., *Polypodium* sp., *Rhododendron* sp., *Primula* sp. recovered from spider webs (*In situ* and webs from *Volunteer-2*) of Gangtok reflect the typical high altitude vegetation i.e., semi-moist deciduous sub-tropical to alpine vegetation of Sikkim Himalaya. Study reflects the distinct characteristics of the regional vegetation which changes from southern to central part of West Bengal to southern part of Sikkim. Therefore the study proves that the palynomorph assemblages from spider meshes not only identify the local vegetation of area of origin of spider webs but also act as passive trap of airborne palynomorphs to associate object or people with places and also may help investigators to prove or disprove alibi in forensic investigations.

**Keywords:** spider messes, natural pollen trap, vegetation indicator, forensic tool, crime scene investigation.