

Oral presentation

Climate stress and active compound maxima in the African Sahel.

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Introduction. Trees and shrubs in the African Sahel are intensively used for a broad spectrum of traditional therapies. The Sahel region also features a sharp climate gradient that shifts latitudinally over time. High concentrations of dietary and medicinally active compounds can be found in the tissues of Sahel trees and shrubs. Many of these compounds are secondary metabolites produced in response to climate stress.

Objectives. To identify patterns of climate-based chemical variation within Sahel medicinal trees and shrubs.

Methods. Fruits from two common Sahel tree species (*Vitellaria paradoxa* Gaertn. and *Balanites aegyptiaca* L.) were collected across climate transects in West Africa. Samples were extracted and analyzed using HPLC, LC-MS, GC and GC-MS. Compound concentrations were compared across the climate range.

Results. The concentration of steroidal sapogenins in *Balanites* seed kernels closely tracks climate. The same is true of levels of the antioxidants α -tocopherol and gallic acid in *Vitellaria* kernels. Fatty acid saturation is more variable, although differences between tree populations at climate extremes are significant.

Conclusion. Intraspecies chemical variation shows a strong linkage to climate stress maxima and secondary metabolite response. These metabolites frequently comprise the active compounds in tradition medicine. Traditional Sahelian pharmacognosy has exploited this link to treat a broad range of health conditions, reflecting a longstanding symbiosis between man, plant and the Sahel environment.

Keywords: *Vitellaria*, *Balanites*, secondary metabolites, pharmacognosy

Selected References

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