

Oral presentation

Variability in content of the anti-AIDS drug candidate Prostratin in Samoan populations of *Homalanthus nutans* (Euphorbiaceae)

Holly E. Johnson^a, Sandra A. Banack^b, Paul A. Cox^a

^aInstitute for Ethnomedicine, PO Box 3464, Jackson, WY, 83001 USA

^bDepartment of Biological Science, California State University Fullerton, 800 N. State College, Fullerton, CA, 92834 USA

Introduction. *Homalanthus nutans* (G. Forst.) Guill. (Euphorbiaceae), used by Samoan healers to treat hepatitis, produces the anti-viral compound prostratin, 12-deoxyphorbol 13-acetate (Cox 1993). Prostratin is being developed as part of a combination therapy to overcome latent viral reservoirs which are the major obstacle to eradication of HIV-AIDS within the human body (Blankson 2002). The molecule is not efficiently synthesized; a supply must be secured in accordance with benefit sharing agreements for clinical trials to commence (Cox 2001).

Objectives. The Samoan government wishes to establish a *H. nutans* based industry for prostratin production. The development of wild plants into pharmaceutical cultivars has historically been conducted without regard to variability in concentration of the active compound. The objective of this work was to develop a method for determining prostratin content and survey distinct populations of *H. nutans* on Samoa to ascertain variability in prostratin production.

Methods. A validated reverse-phase HPLC method was developed to determine prostratin concentrations in *H. nutans*. Leaf, root, and stem tissues from four distinct populations on two Samoan islands were collected and assayed for prostratin content. These data were non-normally distributed and highly skewed so nonparametric statistical analyses were used.

Results. The survey revealed significant variability (100-fold) in prostratin content. The stem tissue (0.2 µg/g to 52.6 µg/g prostratin with a median of 3.5 µg/g), used by healers in indigenous therapies, has a higher median concentration of prostratin than root or leaf tissues. Statistical analysis shows that the population medians are not equal and reveals that the Falealupo population in Savai'i has an excess of high-yielding cultivars.

Conclusion. Populations with an excess of individuals above the 95% confidence level for the median concentration, such as Falealupo, can be targeted for further sampling and selection of a genotype for cultivation. Techniques which efficiently assess variability in the content of bioactive molecules in wild plant populations may be useful for the commercial development of other wild plant species with pharmaceutical potential.

Keywords: ethnopharmacology, phytopharmaceutical development

Selected References

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Presenting Author: Holly E. Johnson, holly@ethnomedicine.org