
POPULATION, BIOLOGY & GENETICS

GENETIC VARIATION AND GENETIC STRUCTURE OF NATURAL POPULATIONS OF *GELIDIUM* SPECIES: A RE-EVALUATION OF RESULTS

P.A. Sosa¹, M. Valero², F. Batista¹ and M.A. González-Pérez¹

¹ Departamento de Biología. Universidad de Las Palmas de Gran Canaria. Campus Universitario de Tafira. 35017 Las Palmas. Canary Islands. Spain. ² Laboratoire de Genetique et Evolution des Populations Vegetales. Universite de Lille 1. URA CNRS 1185. Batiment SN2. Lille. France.

A re-evaluation of data published by Sosa & Garcia-Reina (1992, 1993) about genetic variation and genetic differentiation of *Gelidium canariensis* and *G. arbuscula* natural populations have been realized. Exact tests for population differentiation among sporophytes and gametophytes, tests for Hardy-Weinberg deviation, analysis of genotypic disequilibrium, and the F-Statistics analysis were performed to reach a better understood of the genetic structure of these species. The new data analyses confirm that dispersal is restricted over short distances for the two species. It confirms also that mean way of reproduction is asexual in *G. arbuscula*. We discuss how restricted gene flow and clonal propagation may explain the significant differences between haploid and diploid allele frequencies detected for this species. For *G. canariensis* the spatial sub-structuring is sufficient to explain deviation in allele frequencies between haploid and diploid individuals. However, the effect of asexual reproduction on population genetic structure could not be confirmed. The importance of the sampling design in determining the level and pattern of genetic differentiation within a species is discussed. Comparisons of genetic distances between and within *Gelidium canariensis* and *G. arbuscula* populations show that differences between both species were always greater than those between populations of the same species. These results prove that isozyme analysis is a useful tool for analyzing the genetic structure of natural populations in seaweeds, and defining species boundaries in *Gelidium*.

This work has been carried out from the collaboration surged in ambit of the European Community project "BIOGAP". MAST-III program.