

## INTRODUCTION

The family *Cucurbitaceae* consists of about 90 genera and 750 species, almost divided between the new and old world tropics. The cultivated species are important crops in the tropics, subtropics and milder portions of the temperate zones of both hemispheres. In Egypt, squash is a popular vegetable crop. The cultivated area in 1996 was 66353 feddan, which yielded about 498323 tons with an average of 7.51 ton /feddan\*. Eskandarani cultivar, the only local genotype in Egypt, is declining in its productivity and quality. Therefore, improvement of this cultivar is urgently needed. Conventional breeding methods have led to considerable genetic improvement. However, some genetic potential is not easily available due to strong sexual incompatibility barriers existing at the interspecific and intergeneric levels. Plant biotechnology strategies could help overcoming this problem, but their use generally requires reliable procedures for plant regeneration from in vitro culture. The interest in genus *Cucurbita* has led to a number of breeding programs with the aim to combine or improve desired traits, e. g. disease resistance, yield and fruit quality. Cultivated cucurbits in common are infected by many diseases, causing reduction in yield and quality. Powdery mildew is one of the serious diseases of *Cucurbita* in Egypt.

The objective of this study was to investigate the nature of the barriers which prevent the success of the interspecific crosses

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\* Department of Agriculture Economic and Statistics, Ministry of Agric.. ARE (1997).

between the germplasm of the different *Cucurbita species*. Rescue the zygote /embryo which may form following crosses between some *Cucurbita species* ,was also one of the objectives for the present study. The information and the results expected to be obtained from the present study will be of great help in easing the exchange of genes between *Cucurbita species* ,which, in consequence , result in improving the different economic characters of squash.