

## Genetic Profiling and *in-Vitro* Culture Conservation of Rare and Endangered Desert Plants in Qatar

Talaat Ahmed<sup>1\*</sup>, Hadeel Mohamed<sup>1</sup> and Mohammed Alsafran<sup>2</sup>

<sup>1</sup>Environmental Science Center, Qatar University

<sup>2</sup>Department of Biological and Environmental Sciences, Qatar University, Qatar

Plant micro-propagation systems have been used as an alternative approach to propagate and conserve a large number of rare and endangered plant species that show difficulties to be propagated using conventional methods of propagation.

In the current study, conservation of rare and endangered desert plants using *in-vitro* culture were developed. Generally, these plants are not easy to be propagated by classical horticultural methods. Different techniques including micro-propagation, *in vitro* seed germination and regeneration from callus were applied to propagate and conserve six endangered plant species in Qatar.

Seeds of the plant species were collected, surface sterilized and germinated under aseptic condition using 0.5X MS media. Seedlings from *in-vitro* germination of the seeds were used as explants. The results revealed that the highest callus production of *Leptadenipyrotechnica* was obtained using 2.0 mg/L BAP. In addition, 0.5 mg/L and 2.0 mg/L NAA were good for callus initiation, compared to other hormones. In case of *Glossonemavarians* the best plant growth regulators to induce callus were 1.5 mg/l IBA and 2mg/l BAP. *Prosopis cineraria* formed the best callus under both 2.0 mg/l 2, 4, D and 1.5 mg/l IBA. The obtained callus was treated to regenerate new plantlets.

### DNA profiling of the desert plants

Five native Qatari plants were chosen based on their ecological and medicinal significance. Fresh leaves were collected, frozen using liquid nitrogen and grinded, whole genomic DNA was extracted using Dneasy plant mini kit (QIAGEN). Total of 18 primers were tested on five plant samples, primers were chosen according to primary tests on plant samples. Eight primers amplified visible clear bands and were used for DNA profiling. A total of 215 bands were resolved by 8 primers, with an average of 26 bands per primer. The bands were distributed on the five plant species with an average of 43 bands per plant.

In conclusion, the success of micro-propagation and *in-vitro* conservation of the selected endangered plants depends on the best choice of the explants, the efficiency of the sterilization method and correct plant growth regulator.

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### Biography:

Dr. Talaat Ahmed is an Associate Professor of Plant Molecular Genetics, Environmental Science Center, Qatar University. He obtained his Ph.D. from Yokohama City University, Japan in 2000 and worked as Visiting Scientist and post-doctoral fellow from (2001-2006) at different international institutes and Universities.

He is enrolled in numerous research projects funded by QNRF as Lead PI, Co-LPI and PI including four NPRP projects, one QSTP project and several UREP projects. He published more than 48 original scientific paper and one book chapter. His research focuses on Genome mapping and QTL analysis, Molecular markers, Plant Genetic Engineering, Tissue culture and Classical Plant Breeding.