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In vitro germination and production of *Maytenus vitis-idaea* plants in two culture media.

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INTRODUCTION

The plants of *Maytenus* genus, which belong to Celastraceae family, have a long use history in the popular medicine of several people. Leaves and stems prepared in decoctions are used in Argentina for the treatment of bleeding ulcers, arterial hypertension, articular pains, as depurative, against asthma, and antitumoral. The root is recommended as diuretic.

Maytenus vitis-idaea Griseb. is popularly known as 'colkiyuyo', 'ibirá-yuquí', 'Indian salt', 'carne gorda' ('fat meat'), 'tala salado', among others. It grows in the Paraguayan-Bolivian Chaco, and north and center of Argentina (Digilio and Legname, 1966). It flowers in September-October, and fructifies from October to December. It is a bush of 2-5 m height whose fruit is an ellipsoidal 3 seeded-capsule. Seeds are subellipsoidal, covered by a fleshy murrey aril. It is commonly used as forage, also has medicinal application as astringent, ophthalmic, birth-control, antiasthmatic. From the ecological point of view, the quick renovation of its organic matter, makes it important to maintain the system balance, and to contribute to the restoration of degraded areas in original forests.

It is an unknown species regarding its germination requirements, and the plantlets' establishment, neither there is information on its *in vitro* culture. Therefore, the aim of this work was to study the *in*

METHODOLOGY

Fruits of *Maytenus vitis-idaea* were collected in December of the year 2002 in the Experimental Station of the Ministry Dr. Tito Livio Coppa in Las Gamas, locality of Vera, province of Santa Fe, Argentina (29° 30' S L; 60° 45' WL). Seeds were extracted, and the aril was removed by washing with water, then were dried in the laboratory at room temperature, and stored in hermetic glass flasks at 3° C.

Seeds were disinfected with 96% alcohol, 20 minutes in 2% sodium hypochlorite with some drops of Tween 20, and 3 washes with sterilized distilled water were carried out. Two culture media were used: (1) mineral salts and vitamins of Murashige and Skoog (1962) with 7 g/l agar (MS medium), and (2) distilled water with 7 g/l agar (AA medium).

In vitro sowing was carried out in glass tubes under laminar flow camera, and further incubated at 23 ± 2°C, with a photoperiod of 16 h and a light intensity of 60 $\mu mol/m^2.s$.

The number of repetitions was 40 seeds per each culture medium, and a totally randomized experimental design was used. Germination percentage was evaluated by a test of homogeneity with application of $(\lambda)^2$.

In vitro obtained plantlets were transplanted to a mixture of perlite with soil and maintained in greenhouse.

Counting of germinated seeds with primary roots* *in vitro* germination and the production of *M. vitis-idaea* plants in two culture media.

* was carried out from 0.2 cm length during 40 days until germination was stabilized.

RESULTS AND DISCUSSION

The percentage of sowing contamination was 30% for explants sowed in both media. The germination of the seeds placed in AA medium began 11 days

Results and discussion after the *in vitro* sowing, while in MS medium took

place after 14 days. The opening of cotyledons in AA medium was anticipated 9 days with regard to MS

According to Cabello *et al.* (1996), in *Maytenus boaria* seeds, aril removal previous to seed sowing

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had a significantly positive effect on germinative capacity, since aril inhibits germination strongly, and its elimination allows to overcome latency. Although these authors carried out mechanical escarification with sand, in this work we obtained good results with *M. vitis-idaea* by washing seeds with tap water.

Germination percentages after 20 and 40 days of implanting seeds are shown in Table 1. In AA medium, germination percentage after 20 days was significantly higher that in MS. This response would indicate that absence of external nutrients would accelerate the germination. Eira *et al.* (1995) working on *M. ilicifolia* for not *in vitro* germination conditions obtained similar percentages.

Sixty days after *in vitro* sowing, obtained plants were transplanted to soil, being acclimatized gradually in greenhouse.

Table 1. Germination percentage 20 and 40 days after *in vitro* seed implantation of *M. vitis-idaea* in AA and MS media.

% germination	**AA**	**MS**
20 days after implantation	62 a	36 b
40 days after implantation	92 a	100 a

Same letters in small case in the same row indicate that there are not significant differences: Different letters in the same row indicate significant differences between treatments ($p < 0.05$).

CONCLUSIONS

-The *in vitro* culture of *M. vitis-idaea* seeds sowed in AA medium without mineral salts, allows to advance germination, and to concentrate it on the first 20 days.

-By this methodology it is possible to obtain plants in soil in 60 days.

Note: This study was presented at the 'I Reunión de Biotecnología aplicada a plantas medicinales y aromáticas' (First Biotechnology Meeting on Medicinal and Aromatic Plants), Córdoba, Argentina, 2006.

REFERENCES

Digilio A. P. L. and Legname P. R. (1966) Los árboles indígenas de la provincia de Tucumán. Universidad Nacional de Tucumán, Instituto Miguel Lillo. *Opera Lilloana* XV.

Eira M., Dias T. and Mello C. (1995) Comportamiento fisiológico de sementes de espinheira santa *Maytenus ilicifolia* no armazenamento. *Horticultura Brasileira* (Brasilia, Brazil) **13**: 32-34.

Cabello A. and Camelio M. (1996) Germinación de semillas de Maitén (*Maytenus boaria*) y producción de plantas en vivero. *Ciencias Forestales* **11**: 3- 17.

Murashige T. and Skoog F. (1962) A revised medium for rapid growth and bioassays with tobacco tissue cultures. *Physiologia Plantarum* **15**: 473-497.