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SOMATIC EMBRYOGENESIS AND ORGANOGENESIS INDUCTION FROM ADULT TREES OF *ARBUTUS UNEDO* AND *ARBUTUS CANARIENSIS*

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Arbutus unedo is a small tree or shrub that grows spontaneously in some regions of Portugal, in particular in the Algarve and in the centre region. The fruits are used to make a spirit called “medronha” but they can also be eaten fresh or processed to make gellies. *A. canariensis* is another species of the genus *Arbutus* endemic of the Canary Islands that also produces edible fruits. Due to the economic and ecological interest of the genus we have recently started a program of *in vitro* propagation of these species by different *in vitro* culture approaches, including micropropagation through the culture of shoot tips/nodal segments of selected trees, organogenesis and somatic embryogenesis. In this work, preliminary data about somatic embryogenesis and organogenesis induction are presented. Leaves of *A. unedo* and *A. canariensis* were excised from *in vitro* established shoots of adult plants. In the case of *A. unedo* a clone named “Penamacor” was used whereas in the case of *A. canariensis* a tree growing at the Botanical Garden of the University of Coimbra was tested. Following excision, the petiole was removed and entire leaf blades were cultured in a modified Anderson basal medium containing combinations of the cytokinin BA (benzyladenine) and of the auxin NAA (1-naphtalene acetic acid). The explants were cultured with the abaxial surface in contact with the medium and 3 - 4 cross incisions were made in the blade before culture. Somatic embryos start to appear 1.5 – 2 months after culture, following the browning of the initial explant due to the oxidation of phenolic compounds. Somatic embryo development was asynchronous with the somatic embryos displaying morphologies identical to those characteristic of their zygotic counterparts (globular, heart-shaped, torpedo and cotyledonary). In most of the cases, somatic embryos developed in slow-growing calli but, in a few cases, a more direct origin seems to occur. Histological studies confirmed the embryonic nature of the structures produced. However, in some of the tested media, unipolar structures were also seen that, contrarily to the white somatic embryos formed, were green and showed large leaves. Best results for somatic embryogenesis induction were obtained when a medium containing 2.0 mg/l BA and NAA ranging from 0.5 to 5.0 mg/l were tested. In this case, about 50% of the explants showed somatic embryos. Attempts are being made to convert the embryos and the organogenic structures into full developed plants.