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Poster Abstract - D.21

EXPRESSION PATTERN OF TWO AQUAPORINS-ENCODING GENES IN *POSIDONIA OCEANICA* AFTER SALT STRESS

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Seagrasses of the genus *Posidonia* are marine phanerogams of the Potagemotonaceae family and they are diffused in the Mediterranean basin and in Australia. *Posidonia* meadows represent a very important food substrate for many marine organisms and it's a useful bioindicator for environmental conditions (Pergent et al., 1995). However we are observing a progressive extension reduction of the Posidonia meadows due to natural and antropic factors as well (Marbà et al., 1996). Like other seagrasses, i.e. *Zostera* e *Cymodocea*, *Posidonia* plays an important role in maintaining marine environments. However, basic understanding of seagrass molecular physiology is still limited (Fukuhara et al., 1996; Giordani et al., 2000) and it needs to improve such knowledge in order to planning right conservation projects.

In this work we have investigated the expression domains of two genes encoding two Aquaporins called respectively *Po*PIP1;1 and *Po*TIP1;1 isolated in *P. oceanica* plants (Maestrini et al., 2004). Aquaporins belong to a highly conserved group of membrane Major Intrinsic Proteins (MIPs) playing an important in the water transport through cell membranes. Aquaporins have been studied at molecular, phylogenetic, biochemical and biophysical levels and are likely to be important both for the whole plant (for water transport to and from vascular tissues) and for the cells (for buffering osmotic fluctuations in the cytosol). We have verified, by *in situ* technique, the expression domains of these two genes in different organs of *P. oceanica* both in vivo as well as after salt stress. The experimental results showed that *Po*PIP1;1 is preferentially localized in the apical meristem and in the rhizome, whereas *Po*TIP1;1 is localized in the root; both the aquaporins are expressed in the leaf mesophyll, suggesting an important role of these aquaporins in the uptake and water homeostasis in *P. oceanica* plant.

FUKUHARA et al. 1996. Plant Physiol., 110 :35-42
GIORDANI et al., 2000. - Plant Physiol. Vol 123, 1571-1582.
MAESTRINI et al., 2004. Plant and Cell Physiology 2004 45(12):1838-1847
MARBÀ et al., 1996. Mar. Ecol. Prog. Ser. 137, 203-213.
PERGENT et al.,1995. - Mésogée, 54, 3-27