Co-localization of myrosinase- and myrosinase-binding proteins in grains of myrosin cells in cotyledon of Brassica napus seedlings

The localization of myrosinase and its binding proteins, MBP97 and MBP70, was analysed during early seedling growth of Brassica napus L. Myrosinase and MBP97 are both present in the mature seeds while MBP70 is not detectable. All three proteins accumulate during germination. The MBPs, although lacking cleavable signal peptides, are synthesized on the ER membrane. Among the three major myrosinase isozymes in the young seedlings, the 65 and the 70 kDa isoforms are present exclusively as complexes with MBP97 and MBP70 in a 20 000 × g pellet, while the 75 kDa myrosinase is not associated with MBPs and is predominantly present in the 20 000 × g supernatant. Light microscopic immunocytochemical analyses show myrosinase and MBP97 to be co-localized to the myrosin cells found scattered in cotyledons. Immunoelectron microscopic analyses prove that the myrosinase, the MBP97 and the MBP70 are co-localized in the myrosin grains of the myrosin cells suggesting that complexed myrosinases exist in planta.