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BOOK OF ABSTRACTS



8th International Conference on Legume Genetics and Genomics
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Phytosulfokine-alpha, an enhancer of *in vitro* regeneration competence in recalcitrant legumes

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Oligopeptides have been recognized as signalling molecules playing an important role in plant cell growth and development. Phytosulfokine-alpha (PSK), a plant-specific disulfated pentapeptide, is involved at nanomolar concentrations in initial steps of cellular dedifferentiation, proliferation, and re-differentiation, with a biological function similar to that of plant hormones. On the other hand, legume crops are generally known for their recalcitrance to *in vitro* regeneration approaches, which has restrained the exploitation of biotechnological tools for their genetic improvement.

Against this background, we added PSK at concentrations of 10^{-10} to 10^{-6} M, to semisolid MS-based culture media previously shown to permit some regeneration responses with a number of genotypes of pea (*Pisum sativum*), *Medicago truncatula* and also the highly recalcitrant faba bean (*Vicia faba*).

Callus, cell suspensions and embryo-derived explants of barrel medic R108, pea cvs Frisson and Cameor and a zero vicin, zero tannin faba bean genotype were tested and their embryogenic and organogenic regeneration competence was assessed. PSK had a strong and significant enhancing effect on the regeneration competence of all genotypes, producing somatic embryos and organs that yielded regenerated plants of both pea and *M. truncatula*, and with a major organogenic effect leading to plant regeneration with faba bean where somatic embryos, although produced, failed to convert into viable plants. This is the first report on the use of PSK with legume species.

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