

# Accumulation of Lignans by *in vitro* Cultures of Three *Linum* Species

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Justicidin B, an aryl-naphthalene lignan, has strong cytotoxicity on chronic myeloid and chronic lymphoid leukemia cell lines. The first report of the production of justicidin B in a *Linum* species concerned *in vitro* culture of *Linum austriacum*. Therefore, culture characterization and presence of aryl-naphthalene-type lignans in calli and plantlets of *Linum tenuifolium* from section *Linastrum*, *Linum bienne*, and *Linum glaucum* from section *Linum* were studied. Seed germination of *L. tenuifolium* in the light and darkness was significantly higher ( $p < 0.05$ ) than of *L. bienne* in the light and *L. glaucum* in the darkness. *L. tenuifolium* seedling length in the darkness was significantly higher ( $p < 0.01$ ) than under light conditions. There were no significant differences in the calli and shoot biomass weight, number and length of shoots in three species over one month, while the shoot diameter of *L. bienne* was significantly different ( $p < 0.05$ ) from that of *L. glaucum*. Justicidin B was detected in *L. glaucum* callus and plantlet cultures by HPLC/MS/UV-DAD and HPLC coupled with a photodiode array detector. This finding is important from pharmaceutical point of view and shows the chemosystematic relation between *L. glaucum* and *L. austriacum* and this method will be a powerful tool for detecting natural products in interested and endangered medicinal plants.

*Key words:* Justicidin B, Lignan, *Linum*