

## Growth, herb yield and phytochemical contents in a medicinal herb *Andrographis paniculata* under saline irrigation.

### ABSTRACT

*Andrographis paniculata* (King of bitters/Hempedu Bumi) is a traditional medicinal herb of family Acanthaceae. It is commonly used to cure a variety of ailments and diseases. This study was designed to evaluate the herb yield and phytochemical contents in two germplasm accessions of Malaysian *A. paniculata*, viz. 11261 and 11265, grown with different quality of irrigation water, that fresh (EC iw 0.12 dS m<sup>-1</sup>) and saline (EC iw 2.5 and 5.0 dS m<sup>-1</sup>). Just before blooming, the plants were harvested to record data on six basic traits, including plant height, length and width of main-stem leaves, length and number of primary branches plant-1 and dry herbage yield (plant-1). Concentrations of Na<sup>+</sup> and K<sup>+</sup>, coupled with K<sup>+</sup>/Na<sup>+</sup> ratio, were determined in the cell sap extracted from the top fully matured leaves. Phytochemicals, viz. Andrographolide (AG), Neoandrographolide (NAG) and 14-deoxy-11, 12-didehydroandrographolide (DDAG), were determined in the dry matter of aerial parts using highperformance liquid chromatography (HPLC). No significant changes in plant growth and dry herbage yield (plant-1) were observed with 2.5 EC iw (dS m<sup>-1</sup>) water, compared to 5.0 EC iw water, where reductions in same indices were >13% and statistically significant. Adverse effects of water salinity on growth and dry herbage yield can be attributed with significantly higher concentration of Na<sup>+</sup> and lower concentration of K<sup>+</sup> and lower K<sup>+</sup>/Na<sup>+</sup> ratio in the leaf sap. Phytochemical contents in dry matter were generally unaffected by water salinity. With the exception of Na<sup>+</sup> concentration in leaf sap, response of both accessions to saline irrigation was similar. These results suggest that both accessions exhibited good potential to withstand to salty water environment and produce considerably high amount of phytochemicals under both normal as well as saline irrigation conditions.

**Keyword:** *Andrographis paniculata*; Medicinal plants; Phytochemicals; Salinity.