

## Evaluation of the Shelf Life of Horsetail Stems Stored in Ecological Packaging

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**Abstract :** Equisetum hyemale L. (horsetail, Equisetaceae) is a medicinal plant used and commercialized in simple paper bags or non-ecological packaging in Brazil. The aim of this work was to evaluate the relation between the bioactive compounds of horsetail stems stored in ecological packages (multi-ply paper sacks) at room temperature. Stems in primary and secondary stage were harvested from an organic estate, on December 2016, selected, measured (length from the soil to the apex (cm), stem diameter at ground level (DGL mm) and breast height (DBH mm) and cut into 10 cm. For the post-harvest evaluations, stems were stored in multi-ply paper sacks and evaluated daily to the respiratory rate, fresh weight loss, pH, presence of fungi / mold, phenolic compounds and antioxidant activity. The analyses were done with four replicates, over time (regression) and compared at 1% significance (Tukey test). The measured heights were 103.7 cm and 143.5 cm, DGL was 2.5mm and 8.4 mm and DBH of 2.59 and 6.15 mm, respectively for primary and secondary stems stage. At both stages of development, in storage in multi-ply paper sacks, the greatest mass loss occurred at 48 h, decaying up to 120 hours, stabilizing at 192 hours. The peak respiratory rate increase occurred in 24 hours, coinciding with a change in pH (temperature and mean humidity was 23.5°C and 55%). No fungi or mold were detected, however, there was loss of color of the stems. The average yields of ethanolic extracts were equivalent (approximately 30%). Phenolic compounds and antioxidant activity were higher in secondary stems stage in up to 120 hours (AATt0 = 20%, AATt30 = 45%), decreasing at the end of the experiment (240 hours). The packaging used allows the commercialization of fresh stems of Equisetum for up to five days.

**Keywords :** paper sacks, phenolic content, antioxidant activity, medicinal plants, post-harvest, ecological packages, Equisetum

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