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INTERNAL SECRETORY STRUCTURES IN STEMS OF *SILPHIUM PERFOLIATUM* L.

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Silphium perfoliatum L. (Asteraceae) is a North American perennial used as a medicinal, fodder, honey-bearing, and ornamental plant as well as for remediation of degraded soils.

The location and structure of secretory reservoirs in the stem were examined with the use of light microscopy in cup plant stems. The stems were analysed at various heights (0-2 cm above the root collar, ½ of the stem length, and 0-2 cm below the stem apex/inflorescence) and in three vegetation phases (vegetative phase, full bloom, withering). The plants belonged to the collection of the Department of Vegetable Crops and Medicinal Plants of the University of Life Sciences in Lublin.

It was found that the secretory canals formed two rings: an external ring situated at the height of sclerenchymatous sheaths and bundle phloem, and the internal ring located in an immediate proximity of the xylem. Two external secretory reservoirs, one on each side of the bundle, were present at larger bundles. No internal reservoirs were formed in the proximity of these bundles. At smaller bundles, there were reservoirs of the internal verticil, but there were no external reservoirs. The canals of the external verticil (23-29) were more numerous that in the internal verticil (17-19). In both cases, the largest number of reservoirs was observed at half the length of the stem, and the lowest number was in the apical part. The less numerous internal canals were larger in comparison with the external reservoirs. Depending on the plant developmental stage and location in the stem, the diameter of the external ring canals was 49-91 μm in cross section, and that of the canals of the internal verticil was 52-101 μm. The analysis of the different vegetation phases in the cup plant demonstrated that the canals had the largest diameters and were the most abundant in the withering phase.

The canals evolved through gradual separation of cells (of schizogenous origin). In the cross section they exhibited a nearly circular or oval shape; in the longitudinal section they formed long, continuous canals extending along the organ, i.e. they were ducts *s.str.* In young stems, the canals were surrounded by a single-layered epithelium, which underwent divisions that were tangential to the stem circumference, thereby forming successive layers of glandular tissue. In mature shoots, the reservoirs were surrounded by a 1-3-layered epithelium with dense cytoplasm and numerous plastids.