

Foliar Structural differentiation in *Salola* species

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Structural differentiation of modified Kranz anatomy in *Salsola* species has been studied employing SEM and TEM. Leaves of *Salsola* were composed of epidermis, chlorenchyma, water storage tissue and vascular bundles. The study mainly focused on inner and outer chlorenchyma tissue. The inner chlorenchyma layer exhibited characteristics of bundle sheath cells (BS) and the outer chlorenchyma layer the mesophyll cells (MS) of a typical C_4 structures. Thus, they are referred to BS and MS. Cellular organelles were centripetally arranged in BS, while those in MS were peripherally displaced. Chloroplast dimorphism, when starch was present, was detected between BS and MS. BS chloroplasts lacked grana but showed agrana to rudimentary thylakoids with numerous starch grains. Relatively more mitochondria and microbodies were found in BS, but no structural dimorphism was noticed. More protein bodies were discovered in MS chloroplasts. Compact BS cell walls were much thicker than thin MS cell wall neighboring huge intercellular spaces. Numerous and complex Pd were most frequently encountered in BS-MS interfaces, indicating active metabolite transport between them. The current findings mostly correspond to one of C_4 subtypes, NADP-ME type, known in the C_4 structures. It implies that such spatial specialization of BS and MS probably have structural and functional advantages for an adaption to the environment where they occur.

Keywords: *Salsola* leaves, Structural differentiation, Modified Kranz anatomy, Ultrastructure

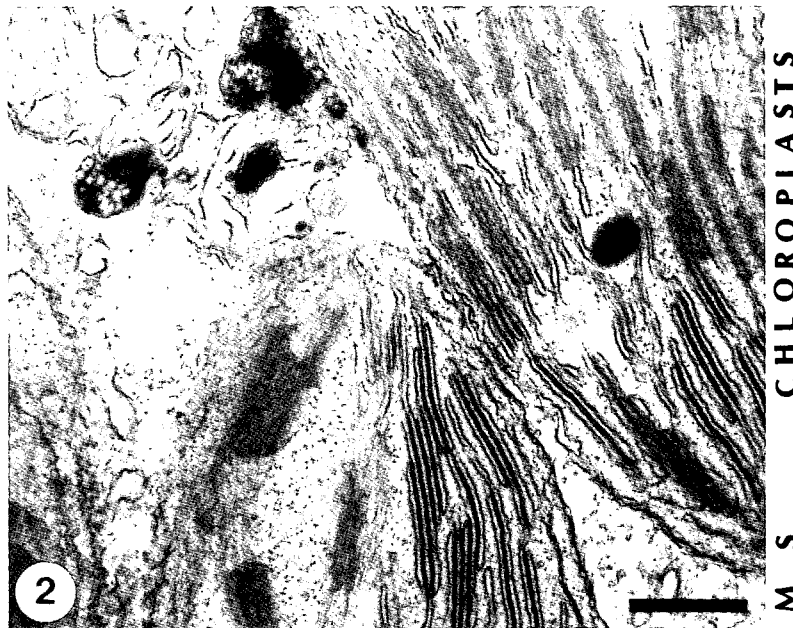
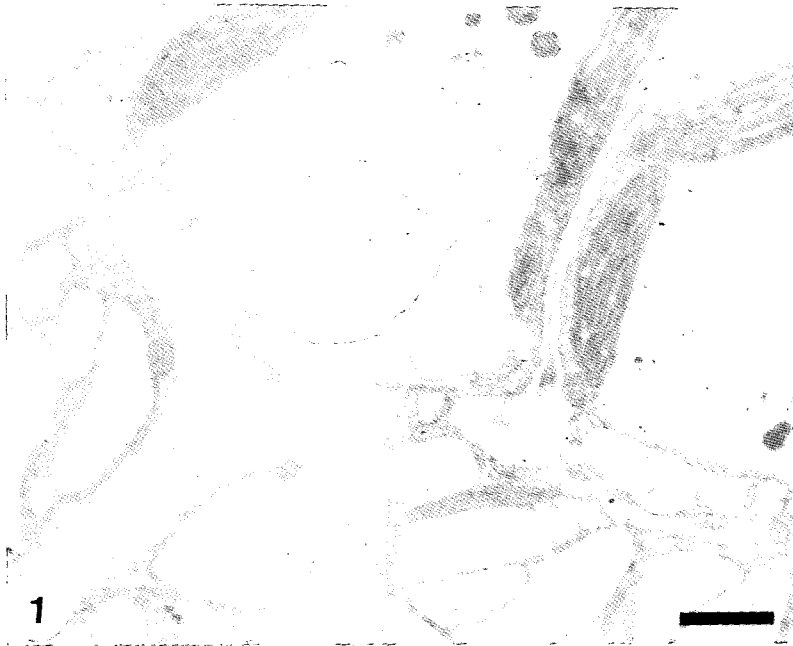


Figure 1. Bundle sheath and mesophyll cells showing structural differentiation in *Salsola komarovi*. Scale bar = 2 μm .

Figure 2. Part of two mesophyll chloroplasts showing grana formation. Scale bar = 0.3 μm .