THE MORPHO-STRUCTURAL ORGANIZATION OF EXTRAFLORAL NECTARIES IN *DRACAENA LATIFOLIA*

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The nectaires in general have attracted the attention of botanists as early as by the days of C. Linné. The large amount of work done in this field of research reflects the special interest of scientists of the past and present days (CASPARY, R. 1848; BONNIER, G., 1878; BEHRENS, W. J. 1879; DAUMANN, E. 1928, 1930, 1931; FREY - WYSSLING 1933; FAHN, A. 1952, 1953; ZIMMERMANN, J. G. 1932; TACINA, FL. 19.. a.o.).

In *Dracaena latifolia* the extrafloral nectaries appear at a certain instant during the blossoming, while their structure does not differ essentially from that of the adjacent tissues. It appears that under certain circumstances in the plant excessive amounts of sugars are accumulating, which when reaching the axes of the inflorescence, induce the formation of nectariferous zones, located at the base of floral pedicels, next to the bracts or at the level of receptacles. The nectar is excreted as colourless, sweet droplets.

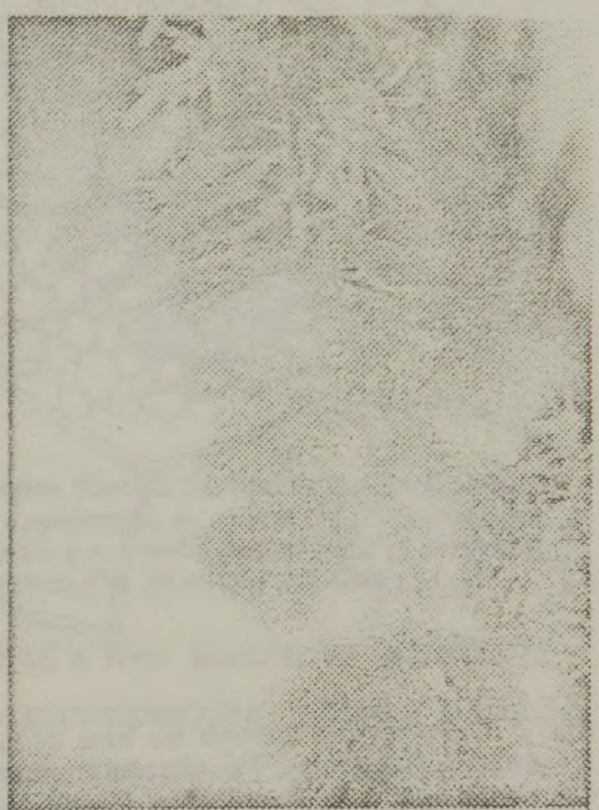
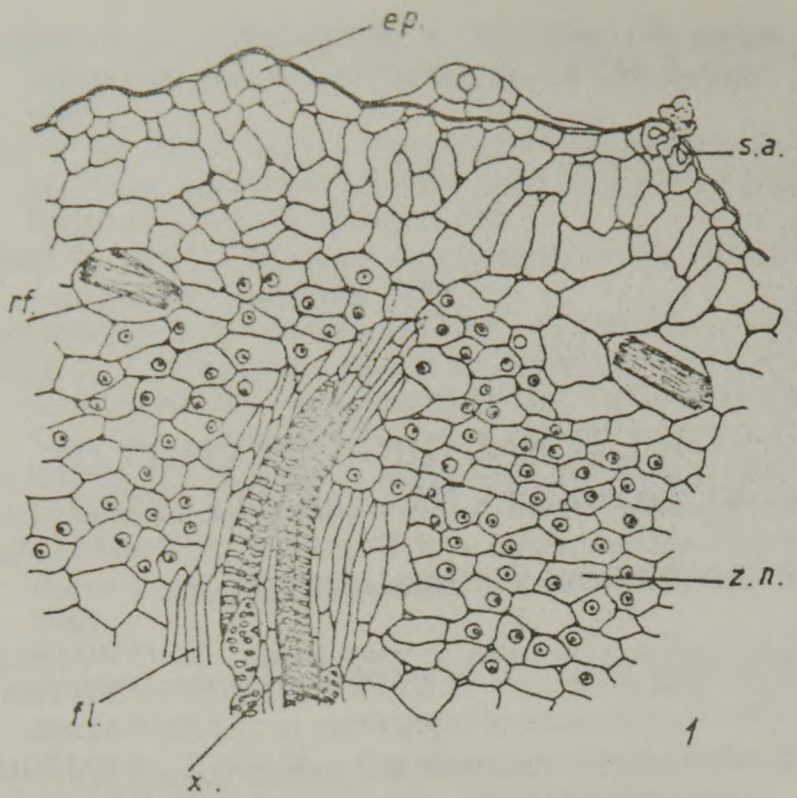


Fig. 1. Fragment of an inflorescence from Dracaena latifolia; the arrows point to the nectar droplets (Orig.)

Material and method

The material under study was taken from a plant grown in a room exposed to light (Fig. 1).



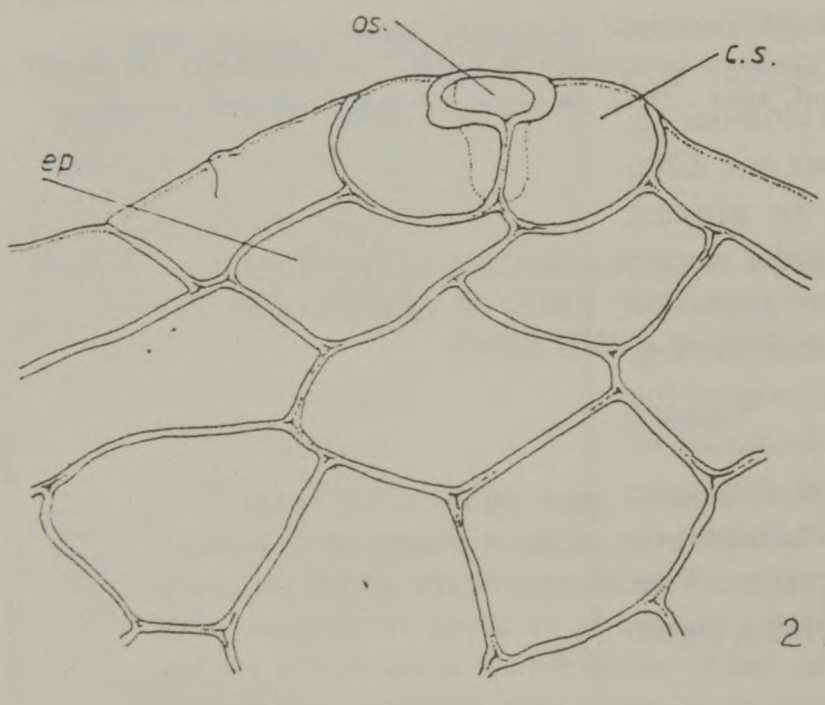


Fig. 2. Cross-section through the base of the floral pedicel: 1 - detailed fragment; 2 - aquiferous stomata, seen apically; c.s. stomata cells; ep - epidermis; fl - phloem; os - stomatal pore; rf - raphides; s.a. - aquiferous stomata; zn - nectariferous zone; xl - xylem (Oc. 10x, Obj. 10-40; Orig.)

After fixation in Carnoy's reagent the material was embedded in paraffin and sectioned on the microtome. Another fraction was sectioned manually by means of a razor. The sections obtained were analyzed under the light microscope and drawings made with the aid of a camera clara.

Observations and discussions

Cross-sections through the pedicel, next to the bract, show a slightly modified compact parenchymatous tissue (Figs. 2, 3, 4). The cells have large nuclei; small intercellular spaces are rich in secretion products, within vacuoles, reminding droplets (Fig. 4).

On the periphery of the nectariferous zone (towards the interior) were identified terminations of vascular phloem and xylem, responsible for the spatial arrangement of the nectary com-

ponents. Within the external cortical parenchyma cells bearing oxalate raphides can be seen.

The epidermal tissue in the nectariferous region presents some peculiar features.

The stomata (aquiferous stomata) located at the level of epidermal protuberances are permanently open; the stomatal pore looks like a crater, through which the products of secretion are elimenated (Fig. 2). The small excreted droplets unite into a large drop persisting throughout anthesis and carpogenesis. Gradually the excreted nectar loses water at the surrounding temperature and the remaining substance resembles to a crystalline powder.

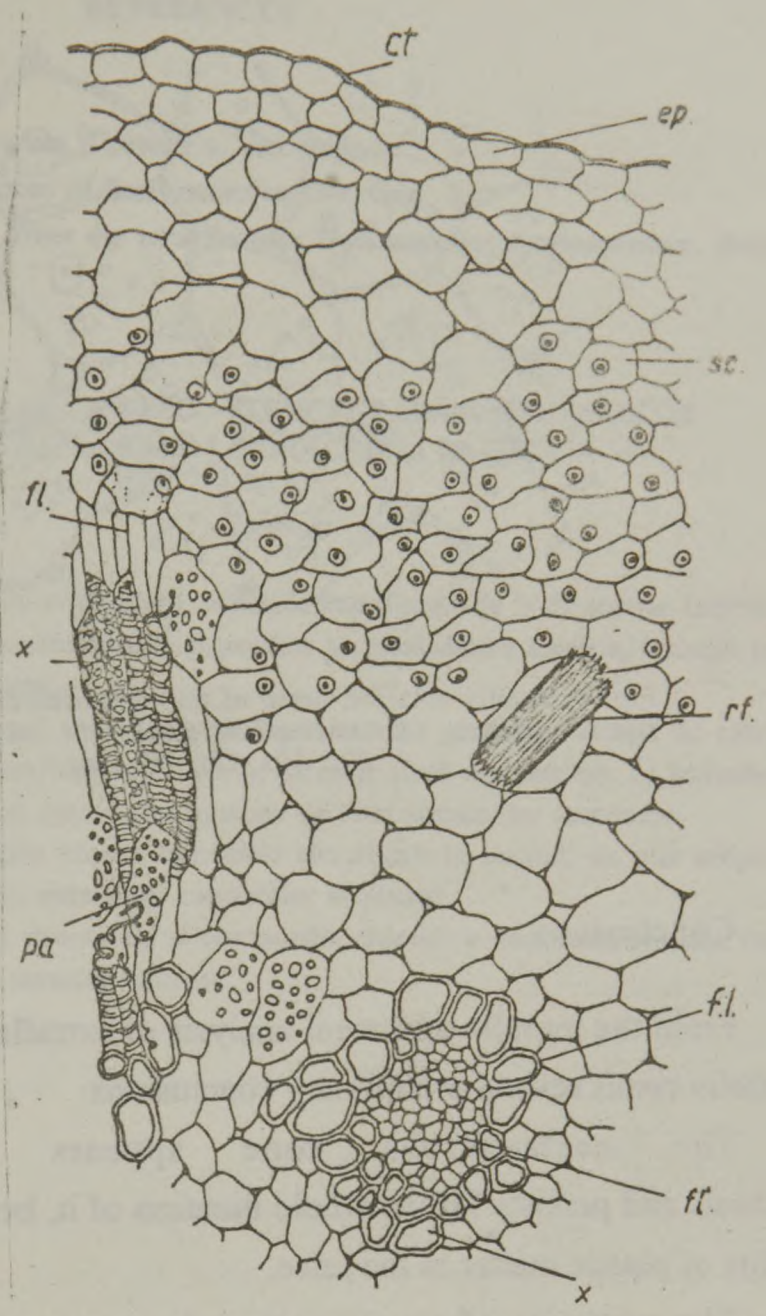


Fig. 3. Cross-section through the base of the floral pedicel: ct - cuticle; ep - epidermis; sc - cortex; f.l. - leptocentric bundle; fl - phloem; p.x. - wood parenchyma; rf - raphides; x - xylem (Oc. 10 x; Obj. 20; Orig.)

The vascular threads are composed of a few annular or scalariform tracheids, wood parenchyma and the accompanying phloem tissue, formed by numerous narrow phloem vessels (Fig. 2, 3). The elements of the wood, represented by tracheids, procure water, while those of the phloem bring organic substances or elaborate plant-juice, the main component of nectar.

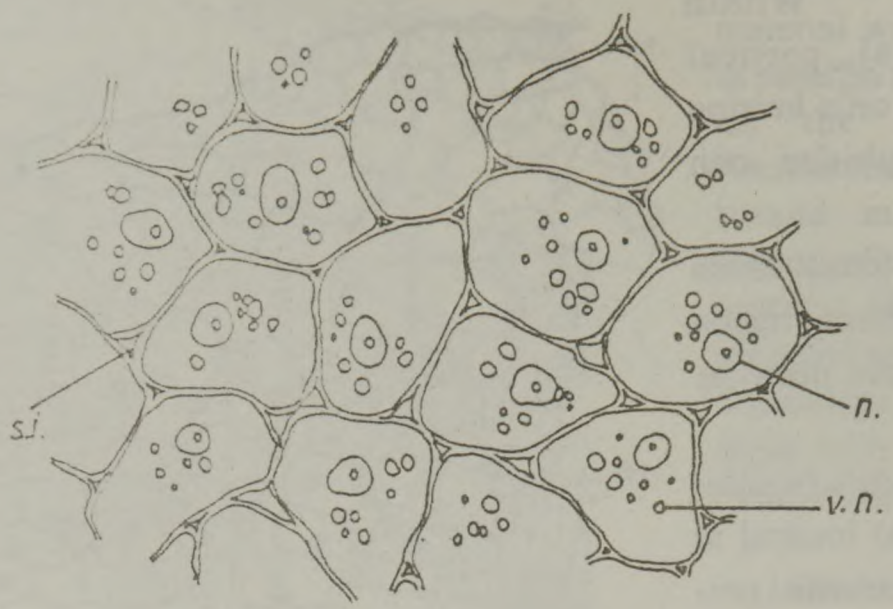


Fig. 4. Greatly enlarged detail of the nectariferous zone, cross - section; n - nucleus; s.i. - intercellular space; v.n. - nectariferous vacuole (Oc. 10x; Obj. 40, Orig.).

Conclusions

From the morpho-structural analysis of extrafloral nectaries in *Dracaena latifolia* result several preliminary conclusions:

The nectariferous zone appears short time before anthesis and persists for the whole duration of it, being determined by a great afflux of plastic matter in the juice.

The presence of vascular threads, predominantly those phloemic, which discharge their contents to the nectariferous zone, suggests that the differentiation of extrafloral nectaries in *Dracaena latifolia,* short time before anthesis, constitutes a means to adjust the amount of sugars in the elaborate juice.

The biochemical study of the product of secretation, which we intend to attempt in further work. will of course contribute new data to give a more complete image of the nectaries of this plant.

REFERENCES

1. BONNIER G., 1879, Les nectaires. Thèses Fac. Sci. Paris
2. FAHN A., 1952, On the structure of floral nectaries. Bot. Gaz.
3. ZIMMERMANN M., 1953, Uber die extrafloralen Nectarien der Angiospermen. Beih Bot. Cbl.

ORGANIZAREA MORFO - STRUCTURALĂ A NECTARIILOR EXTRAFLORALE LA DRACAENA LATIFOLIA

Rezumat

Autorii scot în evidență că nectariile extraflorale de la *Dracaena latifolia* apar scurt timp înaintea antezei și persistă pe toată durata acesteia, inclusiv pe perioada carpogenezei.

Nectariile sunt aprovizionate cu substanțe glucidice și apă de către cordoanele de floem, respectiv xilem, ultimile fiind reprezentate de traheide. Aceste două țesuturi ajung până aproape de baza structurilor secretoare.

Din observațiile noastre traheidele identificate în secțiuni nu sunt proprii nectariilor ci aparțin sistemului conducător al plantei.

Unele detalii structurale și compoziția chimică a nectarului secretat vor face obiectul unor cercetări viitoare.