

The following abstracts were submitted after the deadline for abstract submission and approved by the Organising Committee. They are not published in the Journal of Integrative and Complementary Medicine (JICM) but will be presented at the 8th Mistletoe Symposium.

POSTER PRESENTATIONS

53. In which stages of its life cycle does *Viscum album* L. form statolith starch?

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Background: The germinating hypocotyl of European mistletoe, *Viscum album* L., initially grows negatively heliotropic. If no contact to a solid base is achieved, the growth direction changes, and the hypocotyl grows upright. Experiments in the dark proved that this is negatively gravitropic growth (Tubeuf, 1923). However, Haberlandt, who developed the modern hypothesis of gravitropism based on starch statoliths, could not detect statoliths in his studies of mistletoe and claimed that mistletoe would not form statoliths (Haberlandt, 1903).

Mistletoe grows upright during the juvenile phase, as is the case in its adult phase with all new shoots before the onset of nutation movements leading to the formation of its sphericity (Göbel, Dorka, 1986). To the best of our knowledge, the hypocotyl and the internodes in the gravitropic growth phases of mistletoe have not been studied and published concerning the formation of statolith starch for the perception of the gravity stimulus since Haberlandt's pioneering work. We therefore want to clarify this question in our investigations.

Method: According to Tubeuf's experiments, upright growing hypocotyls were obtained by germinating mistletoe seeds in the light with subsequent obscuration. Longitudinal sections of such hypocotyls were stained with Lugol's solution to detect starch and examined by light microscopy.

Result: Starch granules have been detected in the hypocotyl of mistletoe.

Conclusion: The size of the starch granules, their numbers and their position in the cells indicate that they are statolith starch. In our next experiment we plan to provide further evidence by changing the hypocotyl orientation to see whether the starch granules in question also change their intracellular position and lead to a change in the direction of hypocotyl growth. Moreover, other organs growing in gravitropic orientation will be studied to elucidate in which stages statolith starch is formed by mistletoe.

References

Göbel, Thomas; Dorka, Rolf: Zur Morphologie und Zeitgestalt der Mistel (*Viscum album* L.), Tycho de Brahe-Jahrbuch für Goetheanismus 1986, 167-193.

Haberlandt, Gottlieb Johann Friedrich: Zur Statolithentheorie des Geotropismus, Jahrbücher für wissenschaftliche Botanik 38 (3. Heft), 1903, 447-500.

Tubeuf, Karl Freiherr von: Monographie der Mistel, R. Oldenbourg Verlag, München und Berlin, 1923.

SHORT LECTURES

54. Mistletoe Therapy: Two Cases with an Observation Period over 30 Years

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Purpose: For the last 25 years cancer patients have been treated on an outpatient and inpatient basis in the Clinic for True Naturopathy in Blankenstein hospital, Germany. When reviewing the patient files, it became apparent that long-term courses with mistletoe treatment can only be recorded for a few patients.

Methods: Patient records from 1997 to 2022 were analyzed concerning mistletoe-therapy (N=1200). The diagnoses were e.g., pancreatic carcinoma, lung carcinoma, adenocarcinoma of the gastroesophageal junction, breast carcinoma, adenocarcinoma lung, squamous cell carcinoma of the cervix uteri, cerebral and pulmonary metastatic ovarian carcinoma.

In 840 patients (70%) mistletoe therapy were initiated in our hospital for the first time. 120 patients (10%) were already in progress before their first visit in our hospital and 240 patients (20%) had already been completed or discontinued mistletoe-therapy in the past. In this patient group two observations could be identified which span a period of over 30 years.

Results: Our results show that our patients with mistletoe-therapy only could be observed fragmentarily because the patients changed their doctors, changed their place of residence, or have died. Only two long-term courses (mistletoe-therapy more than 30 years observation) could be identified. Only these 2 patients could be finally questioned about the overall course.

Conclusions: It is very rare to find patients with documentation to mistletoe-therapy over 30 years.