

# Stem Cells in Macrocytic Adenocarcinoma of Bone and Liver

## Abstract

Epidermal characters of nine of the Central European *Equisetum* species were documented using both scanning electron and light microscopy. Several types of cancer can form in the liver. The most common type of liver cancer is hepatocellular carcinoma, which begins in the main type of liver cell (hepatocyte). Other types of liver cancer, such as intrahepatic cholangiocarcinoma and hepatoblastoma, are much less common.

**Keywords:** *Equisetum* • microscopy • SEM • anatomy • identification • adulteration

## Introduction

Liver cancer is cancer that begins in the cells of your liver. Your liver is a football-sized organ that sits in the upper right portion of your abdomen, beneath your diaphragm and above your stomach. In the monograph of *Equisetum arvense* of the European Pharmacopoeia emphasis is laid on the paracytic stomata with typical ridges of the superimposed subsidiary cells and on U-shaped epidermal cells, which should be discernible in a transverse section. Our preliminary investigations revealed that the mentioned characters of the stomata are present in all species of the genus *Equisetum*. Furthermore the U-shaped epidermal cells are characters of the ridges of the branches, which are typically seen in the surface view. Therefore a revision of the monograph seemed to be appropriate. The powder of *Equisetum arvense* mainly consists of non-typical parenchyma and vessels. Only the few fragments showing the epidermis with stomata and ridges with papillae may serve for identification. Promising data are published from investigations using scanning electron microscopy (SEM) or ash preparations, which focus on silica incrustated pilulae and mamillae. These structures are poorly visible in the light microscope. An attempt for the identification of powdered material was done by Schier he presented a coarse overview of the papillae on the ridges.

## Results

On larger fragments in a powder the arrangement of stomata may be discernible. Stomata in a single row or in two close rows per flank in the main stem are characteristic for *E. sylvaticum* and *E. pratense*, while in *E. arvense* the stomata occur in rows of Stomata in more than 4 axial rows are typical for *E. palustre*, particularly towards the ridges the stomata appear in horizontal rows too. All these species is common that the central part of the grooves is free of stomata. In contrast, in *E. fluviatile* the stomata are scattered all over the grooves. On the main stem of *E. telmateia* stomata are nearly absent; the branches resemble in respect to the arrangement of stomata those of *E. arvense*. The size of the guard cells is hardly discernible because of the superimposed subsidiary cells. Their size seems to be too variable within a species to serve as differential character. In surface view

## FURUKAWA Yoichi\*

Dept. of Pharmacognosy, University Vienna  
Center of Pharmacy, Althanstra Be 14, A -  
1090 Vienna, Austria

\*Author for correspondence:  
furukawa26626@ims.u-tokyo.ac.jp

**Received:** 01-Aug-2022, Manuscript  
No. srrm-22-17850; **Editor assigned:**  
03-Aug-2022, PreQC No. srrm-22-  
17850 (PQ); **Reviewed:** 17-Aug-  
2022, QC No. srrm-22-17850;  
**Revised:** 24 Aug-2022, Manuscript  
No. srrm-22-17850 (R); **Published:**  
31-Aug-2022, DOI:  
10.37532/srrm.2022.5(4).69-70

in the light microscope the area of ridges in the subsidiary cells is usually larger than the area covered with silica pilulae. The variability of the density of the ridges in the subsidiary cells seems to be too large to serve as character for differentiation.

## Discussion

The genus *Equisetum* and the difficult identification of the species challenged scientists at any times, therefore many details of the anatomy of members of the genus *Equisetum* are already published [e.g. 2, 3, 41, but mostly with respect to taxonomy and relationship of the species. For pharmaceutical purposes two aspects are essential: identification should be possible even in powdered material the methods should be simple and available to everybody involved in the proof of crude drugs. Since the characters mentioned in the monograph of the European Pharmacopoeia are too general for this purpose we initiated a search for reliable details. The method of choice is light microscopy; however, the silica pilulae, the mamillae on epidermal cells as well as the arrangement of papillae on the ridges are hardly discernible. A more complex method for detection of surface characters is SEM. Therefore we studied the epidermis of main stems and of branches of all major Central European species by SEM and tried to recover promising details in the light microscope. More emphasis in the microscopy of *Equisetum* has been laid on the papillae of the ridges, but most authors focus

on the differentiation between *E. anense* and *E. palustre* only. Schier et al. presented drawings of the papillae of nearly all relevant species; unfortunately no differentiation between main stem and branches was done. In addition the arrangement of the papillae on the ridges remained unconsidered; some drawings differ considerably from our material. The papillae in lateral longitudinal view seem to be highly characteristic, particularly when combined with their arrangement on the ridges.

## Acknowledgement

We are thankful to Dr. Walter Till, Dept. for Systematics and Evolution, Faculty Center Botany, Univ. Vienna, for the permission to study material of *E. pratense*, *E. variegatum* and *E. ramosissimum* of the herbarium WU.

## Conflict of Interest

No conflict of interest

## References

1. Kaufman P, Bigelow W C, Schmid R, Ghosheh N S *et al.* Electron microprobe analysis of silica in epidermal cells of *Equisetum*. *Amer. J. Bot.*; 58: 309-316(1971).
2. Hauke RL. A taxonomic monograph of *Equisetum* subgenus *Equisetum*. *Nova Hedwigia*; 30: 385-455(1978).
3. C N page. An assessment of inter-specific relationships in *Equisetum* subgenus *Equisetum*. *New Phytol*; 71 : 355-369(1972).
4. Czygan FC, Wichtl M, *Equiseti herbal in Teedrogen und Phytopharmaka. 4<sup>th</sup> ed.* Stuttgart: Wissenschaftliche Verlagsgesellschaft mbH: 195-199(2002).