tobacco (*Nicotiana tabacum* L. cv. Petit Havana SR1) rootstock as described by Synková et al. (J. Plant Physiol. 155: 173-182, 1999) or as rooted plants (kanamycin resistant progeny of the transgenic grafts). Samples for TEM were taken from the central part of the young fully developed leaf or isolated chloroplast suspension and after overnight fixation in 3 % glutaraldehyde were embedded in Spurr's resin. Ultrathin sections were stained by uranyl acetate and Reynold's lead citrate and examined in JEM 1010 (Jeol, Japan). Analysis of serial sections by program IMOD 2.42 enabled three dimensional (3D) reconstructions of chloroplasts and pseudo-crystals. The size of basic structural unit was calculated using MRC Cambridge Image Processing System (1994).

3D reconstruction showed that pseudo-crystalline structures occupy up to 20 % of chloroplast volume (at least in that part of chloroplast which was studied).

The average size of basic cell unit was calculated as: a = 11 nm, b = 12 nm, = 100 .This size parameters support our hypothesis, although dehydration preceding embedding in epoxide resin cause a shrinkage of natural structures. Therefore further experiments are needed to prove it.

Acknowledgements

The authors thank to Dr.J. Nebesářová and the staff of her laboratory (IP, Lab.of EM, České Budějovice) for the assistance in electron microscopy. The work was supported by grant of the Grant Agency of the Czech Republic No. 206/01/1061.

THE ROLE OF STRUCTURAL DIFFERENCES OF FLAVANOLIGNAN SILYBIN STEREOIZOMERS IN BINDING TO HEPATOCYTES

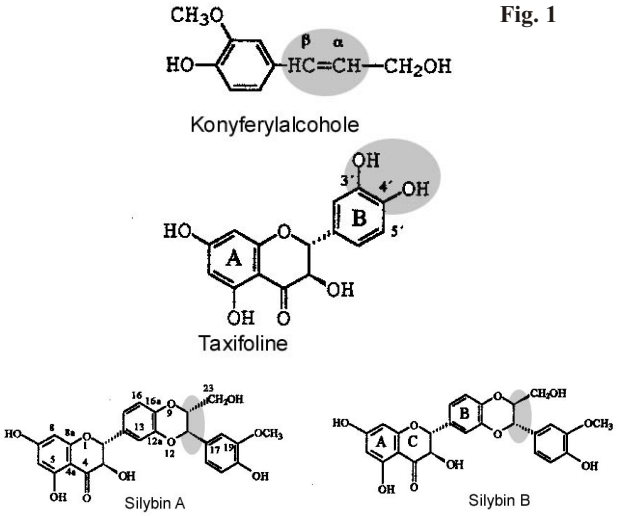
J. Šebestian[1,2], Š. B. Šebestianová[3], Z. Švagera[4] and A. Jegorov[5]

[1]Institute of Physical Biology, Univ. South Bohemia, Nový Zámek 136, CZ-373 33 Nové Hrady, Czech Republic, E-mail: sebest@jcu.cz
[2]Dept. Plant Physiology, Fac. Biol., Univ. South Bohemia, Branišovská 31, CZ-370 05 České Budějovice,
[3]Dept. Genetics, Fac. Biol., Univ. South Bohemia, Branišovská 31, CZ-370 05 České Budějovice,
[4]Institute of Medical Chemistry and Biochemistry, Fac. Med., Palacký Univ., Hněvotínská 3, CZ-775 15 Olomouc
[5]IVAX CR, Research Unit, Branišovská 31, CZ-370 05 České Budějovice

Hepatoprotective effects of Milk Thistle (*Silybum marianum*) have been known since ancient Greece and Roma very well. Flavanolignans (called silymarine) extracted from Milk Thistle seeds were shown to help against hepatotoxic effects of many natural toxins (i.e. alga toxin microcystine, mushroom toxins amanitin and phaloidin, fungal toxins cyclosporines, etc.). The main active substance of silymarin is silybin.

Recent studies revealed that many transport and metabolic processes in the cell are stereospecific. Silybin occurs in two stereoisomers (A and B) that differ in the bound between konyferyl and taxifolin (Fig. 1). We developed a new method for preparation and purification of these silybin stereoisomers and for their specific labelling by radioactivity (3H, 125I) at positions 6 and 8. Transport of four stereoisomers was studied. The best affinity of transport systems were found for 6-[125I]silybinA, which is taken 100 times better than the other silybin stereoisomers.

Fig. 1



This work was supported by grants GACR 204/98/P129, MSMT CEZ:J06/98:123100001 and GACR 521/99/D098.

OVEREXPRESSION AND PURIFICATION OF RECOMBINANT MEMBRANE PROTEIN PSBH IN ESCHERICHIA COLI

Zbyněk Halbhuber[1], Zdenka Petrmichlová [1,2], Kassimir Alexciev[3], Eva Thulin[4] and Dalibor Štys[1,2,5]

[1]Photosynthesis Research Center, Institute of Physical Biology, University of South Bohemia, Zamek 136, 373 33 Nové Hrady, Czech Republic
[2]Department of Autotrophic Microorganisms, Institute of Microbiology CAS, 37901 Trebon - Opatovický mlýn
[3]CanAg Diagnostics, 414 55 Gothenburg , Sweden
[4]Biophysical Chemistry, Lund University, Box 124, 22100 Lund, Sweden5
[5]Institute of Landscape Ecology, Academy of Science of the Czech Republic, Zamek 136, 373 33 Nové Hrady

In this work we featured an expression system that enables the production of sufficient quantities of membrane PsbH protein (~mg´s quantities) for solid-state NMR as well as other biophysical studies. PsbH is a small membrane protein associated with the photosystem II complex in higher plants, algae and cyanobacteria. Although the exact role of PsbH is not clear, it seems to be important for the structure and function of photosystem II.

In this approach a synthetic psbH gene from cyanobacterium *Synechocystis sp.* PCC 6803 was cloned into a plasmid expression vector, which allowed a direct synthesis of the PsbH protein as a glutathione-S transferase (GST)