

Preliminary Report: ULTRASTRUCTURE OF THE BOVINE LIVER SINUSOID WITH SPECIAL REFERENCE TO ITO'S, FAT STORING CELLS OR LIPOCYTES

Reporte Preliminar:

Ultraestructura del sinusoides hepático del bovino con referencia especial a las células de Ito, células almacenadoras de grasa o lipocitos

Our studies confirmed the ultrastructure of the bovine liver sinusoid reported by Wood [3, 4]: an endothelial and Kupffer cell lining, a prominent basal lamina, and the space of Disse where the hepatic cell microvilli, collagen fibrils, and perisinusoidal cells are observed.

These cells were ovoid or fusiform, with large ovoid or fusiform nuclei with a moderate amount of heterochromatin and small nucleoli. The cytoplasm was moderately abundant, containing

Jorge A. Soto
Federico Delgado

Unidad de Investigaciones Ultraestructurales
Facultad de Ciencias Veterinarias
Universidad del Zulia
Maracaibo Estado Zulia, Venezuela.

few mitochondria, scant rough endoplasmic reticulum, abundant peripheral microtubules, free ribosomes, few glycogen granules

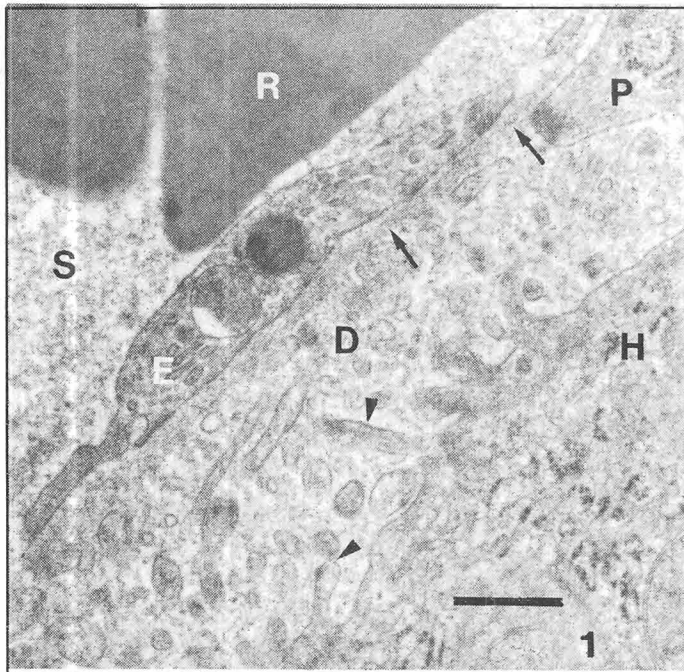


Fig. 1. Normal bovine liver sinusoid (S) showing the endothelial cell lining (E), the basement membrane (arrows), and the space of Disse (D) where microvilli (arrowheads) of a hepatocyte (H) and part of a perisinusoidal cell (P) are observed. A red blood cell (R) is observed at the lumen of the sinusoid. Bar = 0.5 μm.

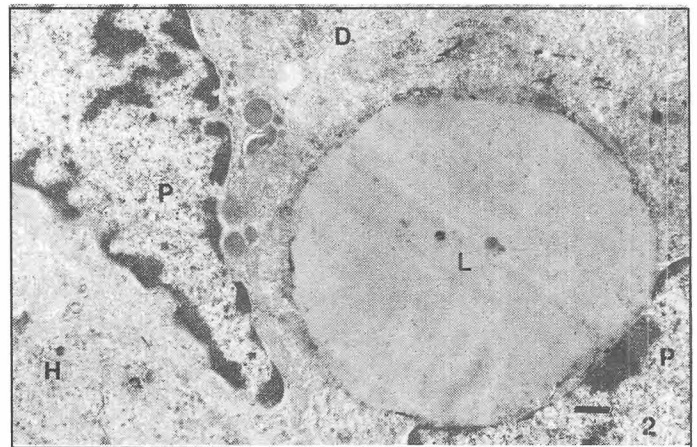


Fig. 2. Observe two perisinusoidal Ito's cells (P) located at Disse's space (D). One Ito's cell shows a lipid droplet (L). Part of a hepatocyte (H) is also observed. Bar = 0.5 μm.

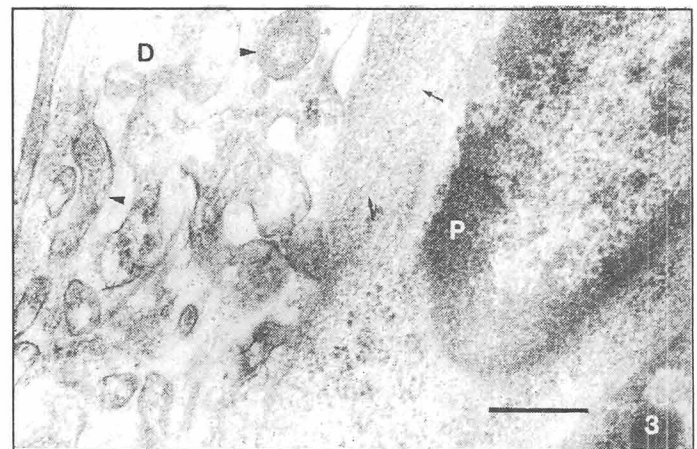


Fig. 3. Detail of a perisinusoidal Ito's cell (P) showing abundant peripheral microtubules (arrows). Microvilli (arrowheads) from nearby hepatocytes are observed at Disse's space (D). Bar = 0.5 μm.

Recibido el: 15 febrero 1993

and, the most important feature of these cells, the presence of a large lipid droplet, round or ovoid, of variable electron density, free, non-coated by cellular membranes; this lipid droplet displaced the nucleus of the cell, causing its deformity. Cell limits were readily discernible and specialized junctions to adjacent hepatocytes were not observed.

This type of cell corresponds to the perisinusoidal cells described in man by Ito and others [1], in the rabbit by Yamagishi [5], and by Kawanami [2], in the bull and goat liver sinusoid.

The function of Ito's cell is unknown, but, due to its location beneath the basal lamina and their abundant microtubules content, they presumably function as a supportive cell for the sinusoidal wall. Their role in the formation of collagen fibrils and the basal lamina have been suggested [2, 4], however, we could not find morphologic evidences to support this theory.

ACKNOWLEDGEMENTS

Authors thank Dr. O. Castejon, J. Espinoza, R. Caspersen, Biological Research Institute, College of Medicine University of Zulia, for technical help, and Mrs. M. Mitchell for reviewing the manuscript. This research was financed by CONDES-LUZ.

REFERENCES

- [1] Ito, T. and Nemoto, M. Uber die Kupfferschen sternzellen un die fettspeicherungszellen in der blutkapillarenwand der menschlichen leber. *Folia Anatomica Japonica* 24: 243-258, 1952.
- [2] Kawanami, O. Electron microscopic study of mammalian liver with periodic acid methenamine silver stain -basement membrane structure and fibrogenesis. *Acta Pathologica Japonica* 23:717, 1973.
- [3] Wood, R.L. Observations on the fine structure of calf liver. *Anatomical Record* 136: 304, 1960.
- [4] Wood, R.L. Evidence of species differences in the ultrastructure of the hepatic sinusoid. *Zeitschrift fur Zellforschung* 58: 679-692, 1963.
- [5] Yamagishi, M. Electron microscopic studies on the fine structure of the sinusoidal wall and fat-storing cells of rabbit livers. *Archivum Histologicum Japonicum*, 18: 223-261, 1959.

UNIVERSIDAD DEL ZULIA
FACULTAD DE CIENCIAS VETERINARIAS
DIVISION DE POST-GRADO

**PROGRAMA DE ESPECIALIZACION Y MAESTRIA
EN MEDICINA VETERINARIA PREVENTIVA**

Especialización:	De Enero a Diciembre de 1994 (2 semestres lectivos) cursando 30 unidades crédito.
Maestría:	De Enero 1994 a Diciembre de 1995 (4 semestres lectivos), cursando 48 unidades crédito.
Inscripciones:	Noviembre de 1993.
Matrícula:	Bs. 3.000,00 por unidad crédito. US \$ 60.00 por unidad crédito.
Inicio de Clases:	Enero de 1994.

Para mayor Información dirigirse a:

Universidad del Zulia
Facultad Ciencias Veterinarias
División de Post-Grado
Núcleo Agropecuario
Apartado Postal 526. Ciudad Universitaria
Fax: 58-61-918889 - Maracaibo, Estado Zulia, Venezuela