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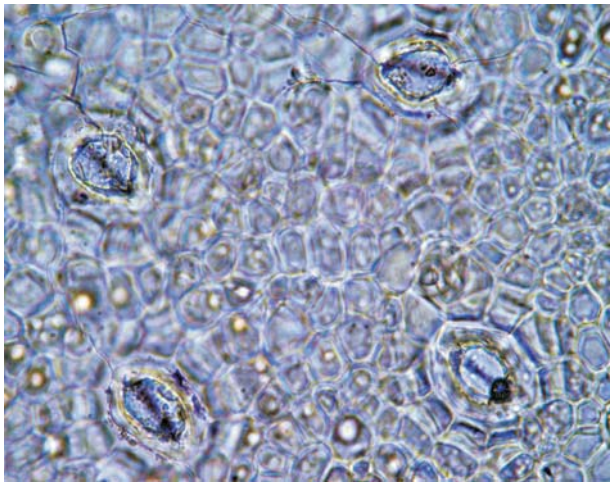
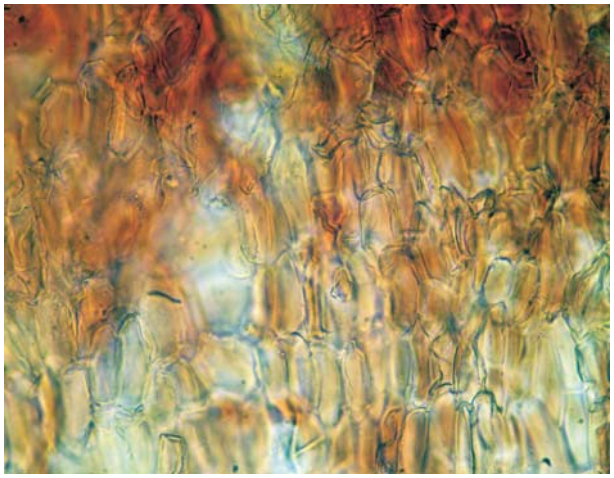
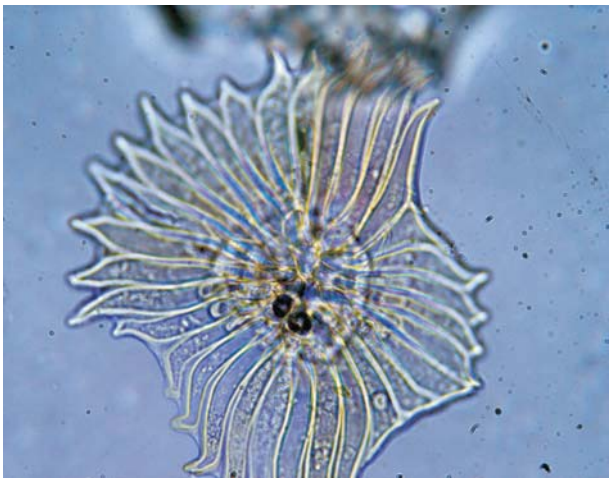
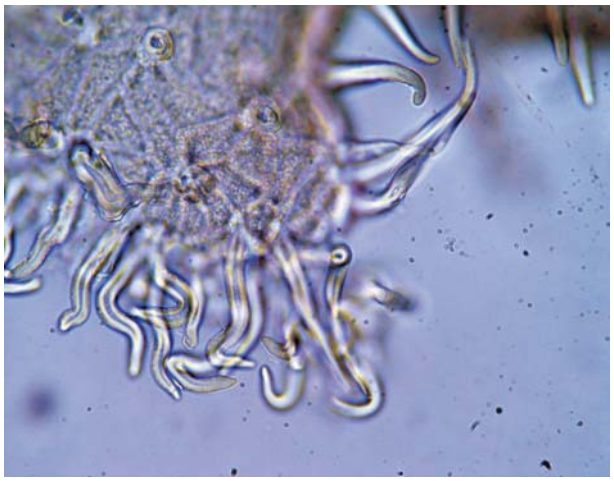

Maria E. Periago & Maria Ana Dacar

2010

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Introducción

Los mamíferos herbívoros influyen sustancialmente en el funcionamiento de muchos ecosistemas debido a su impacto sobre la producción primaria, la descomposición de materia orgánica, y la redistribución de nutrientes (Batzli 1978). El flujo de materia orgánica entre organismos productores, cadenas tróficas de herbívoros y descomponedores permite el intercambio de energía y nutrientes. Según Batzli (1978), la energía y los nutrientes son factores necesarios para la producción de nueva materia orgánica a cualquier nivel trófico, y la disponibilidad de uno influye en la utilización del otro. De esta manera, los procesos interactivos en los ecosistemas son compartidos y sirven para retroalimentar el flujo de energía y reciclar los nutrientes.

Por lo tanto, los herbívoros pueden directamente influenciar la tasa de producción de su propio alimento, afectando el "fitness" de las plantas al reducir el crecimiento y la reproducción e incrementando la mortalidad (Mooney 1972). Los mamíferos herbívoros pueden cambiar la dinámica de las comunidades de plantas, alterando la diversidad de especies, la estructura tridimensional y los procesos de sucesión. Estos efectos, a su vez, afectan la diversidad y actividad de otros herbívoros, predadores y parásitos de la comunidad (Lindroth 1989).

Las hojas de una planta están compuestas por tres tipos de tejidos: la epidermis, el mesófilo y el tejido vascular o venas. La hoja se encuentra delimitada por una epidermis superior y otra inferior. Esta capa incluye diversos tipos celulares, entre los que se incluyen tricomas y estomas, con sus respectivas células guardianas (Jensen-Salisbury 1988). La técnica microhistológica utiliza estos tipos celulares para

identificar las especies vegetales consumidas por vertebrados. Las características detectadas son: presencia, tamaño y forma de tricomas y estomas; forma y organización de las células guardianas; presencia y posición de células especializadas y orientación de las nervaduras (Bauer et al. 2005).

La técnica microhistológica fue descripta por Baumgartner & Martin (1939) y desde entonces ha sido utilizada para identificar ítems de la dieta de animales (Vavra & Holechek 1980). Denham (1965) y Sparks & Malechek (1968) verificaron la técnica triturando a mano mezclas de pastos y hierbas. Desde entonces, la preparación de las muestras para identificación a través de la microscopia ha variado considerablemente. Cracker (1959) diluyó muestras fecales en agua y las colocó entre dos portaobjetos. Storr (1961) hirvió, secó y molió las muestras en una mezcla de ácidos. Después las muestras fueron lavadas con agua, teñidas de violeta, centrifugadas y montadas en portaobjetos. Otras técnicas para preparar las muestras han sido presentadas por Dusi (1949), Hercus (1960), Hegg (1961), Steward (1967), Zyznar & Urness (1969), Casebeer & Kess (1970), Ward (1970), Hansen et al. (1971) y Korfhage (1974). Aquí describimos la técnica empleada por Dacar & Giannoni (2001), que facilita la identificación de hojas y partes duras de las plantas, como ser el tallo y las semillas.

Agradecimientos

El propósito de esta guía es contribuir al análisis de la dieta de herbívoros con la técnica microhistológica. Esperamos que sea útil y ayude a ahorrar tiempo y recursos. Agradecemos a las instituciones que nos apoyaron financieramente y/o con la necesaria infraestructura: Instituto Argentino de Investigaciones de las Zonas Áridas (IADIZA), Instituto Multidisciplinario de Biología Vegetal (IMBIV), Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Universidad Nacional de Córdoba, y Rufford Small Grants Foundation (RSG# 34.12.06).

Técnica Microhistológica

Según Dacar y Giannoni (2001)

Para macerar los tejidos, poner la muestra en un frasco con agua y una cucharada de 17,5% NaHCO3 (bicarbonato de sodio) y dejar reposar hasta que se ablanden. Hojas: aprox. 48 hs. Tallos y semillas: aprox. 1 semana.

Extraer la muestra y triturarla en un mortero hasta que se forme una pasta.

Añadir unas gotas de sodio hipoclorito (lavandina) para aclarar la muestra.

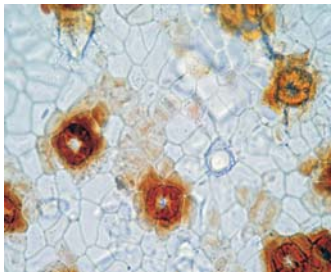
Volcar la muestra sobre un tamiz de 74 micrones y enjuagar con abundante agua.

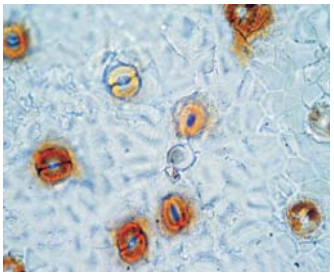
Con la ayuda de una pinza, retirar una pequeña porción de la muestra y montarla en un portaobjetos sobre una o dos gotas de glicerina. Tapar con un cubre objetos y analizar.

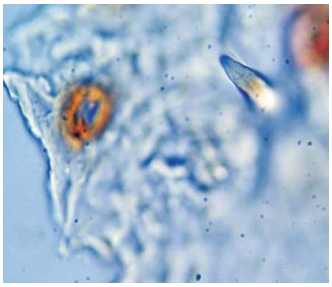
Familia Anacardiaceae

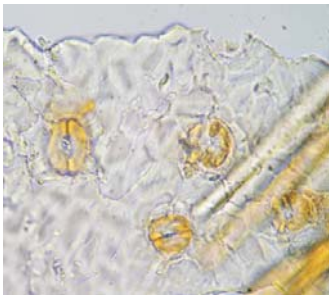
Schinus fasciculatis

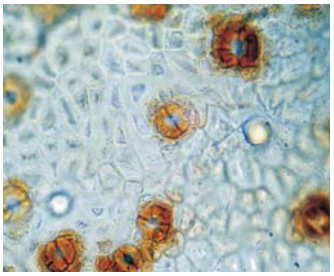
Hoja

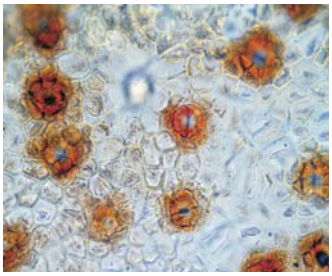




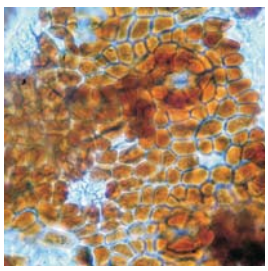


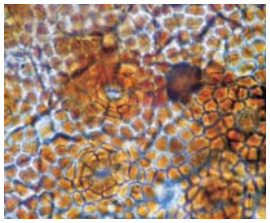


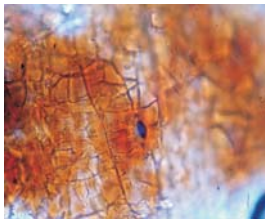


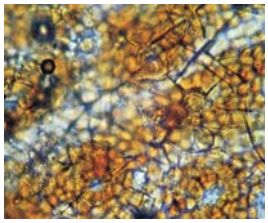


Tallo*







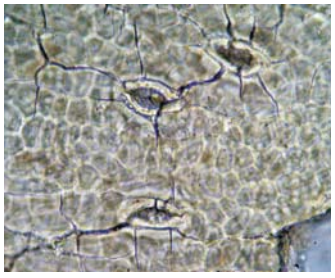


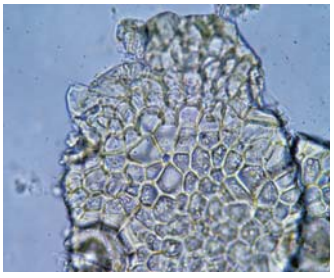
* Refiere a la corteza externa del tallo

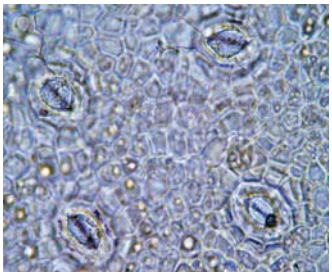
Familia Apocynaceae

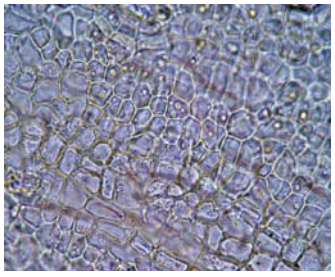
Aspidosperma quebracho-blanco

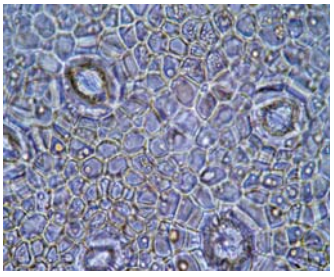
Hoja

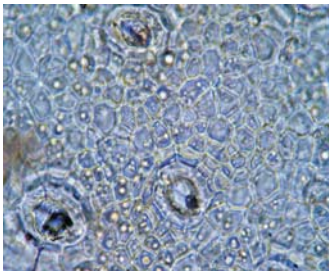




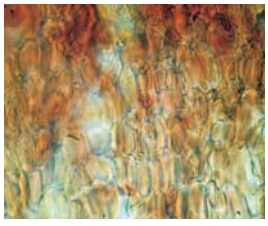


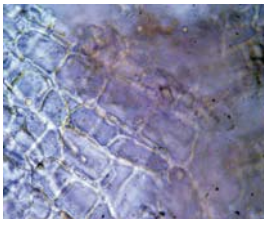


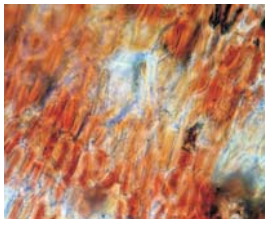


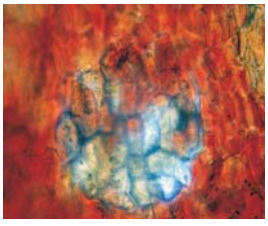


Tallo





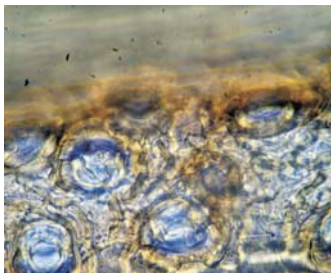


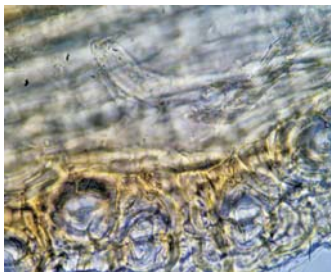


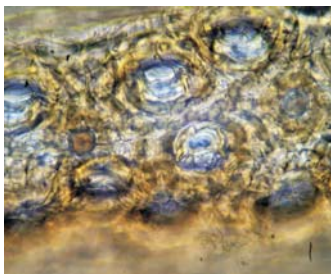
Familia Bromeliaceae

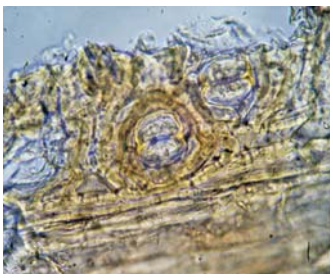
Bromelia urbaniana

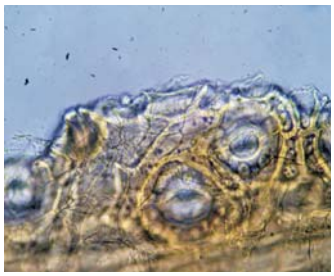
Hoja

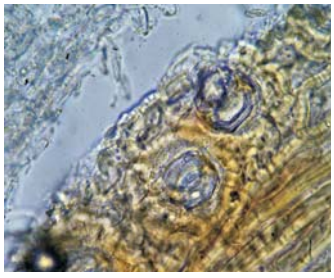


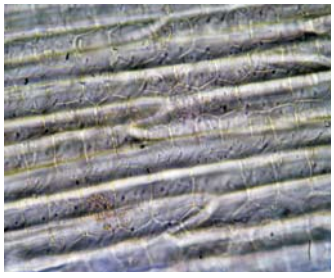








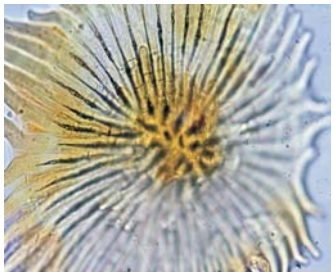


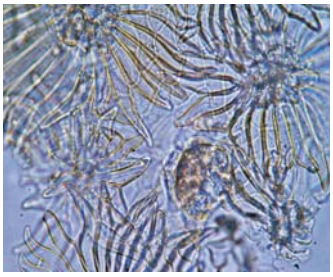


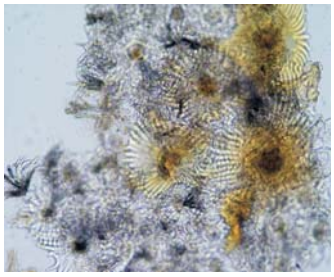
Familia Capparaceae

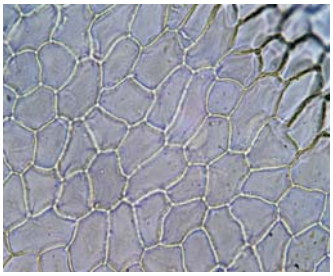
Capparis atamisquea

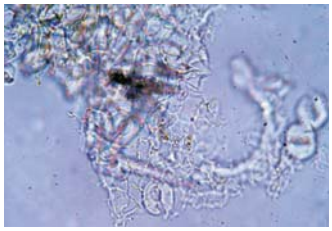
Hoja











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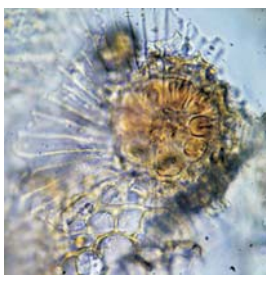
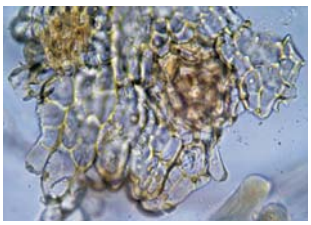
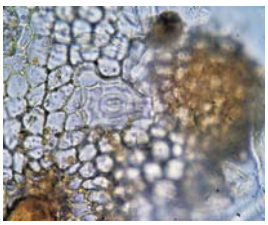
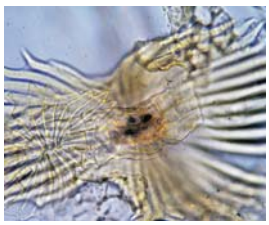




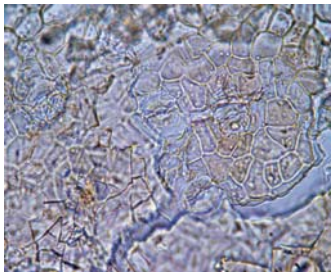


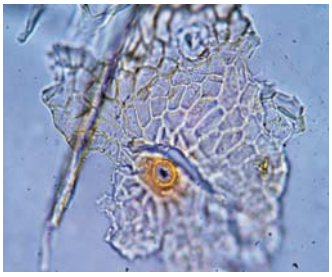


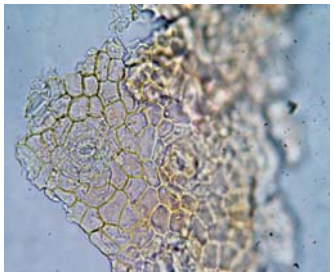
Familia Celastraceae

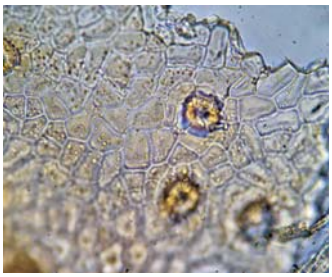
Maytenus boaria

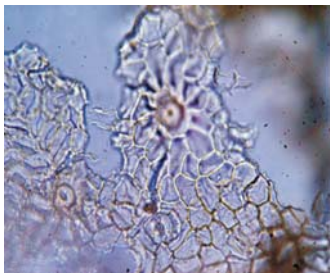
Hoja











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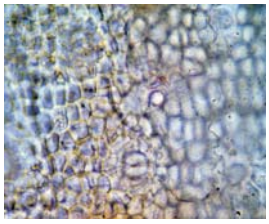
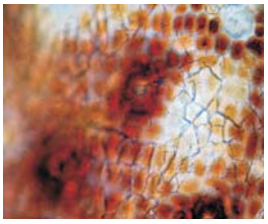
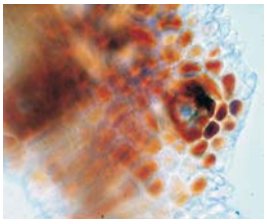
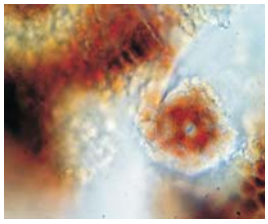




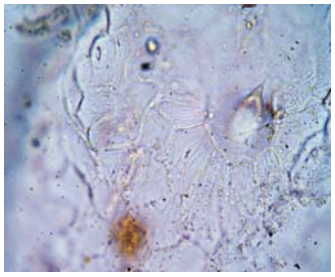


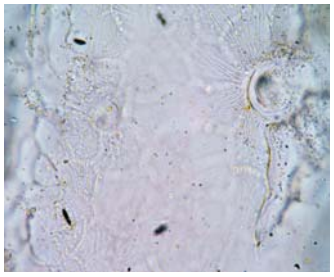


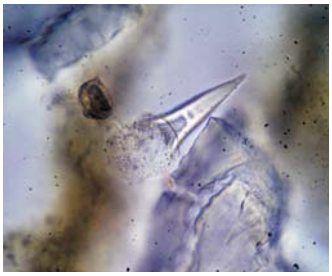
Familia Celtidaceae

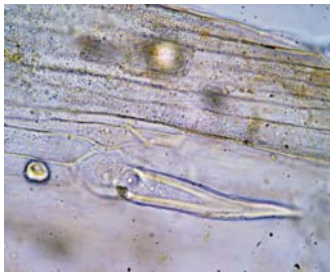
Celtis ehrenbergiana

Hoja









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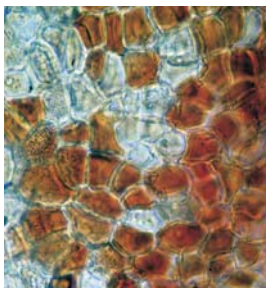
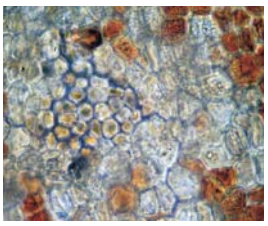
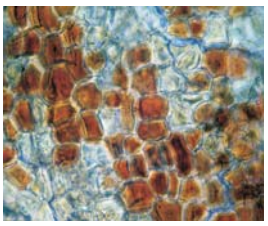


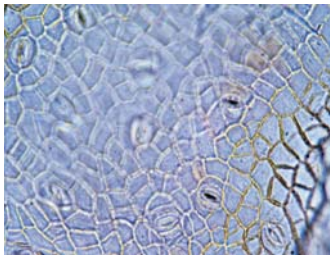


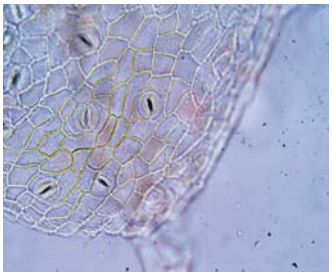


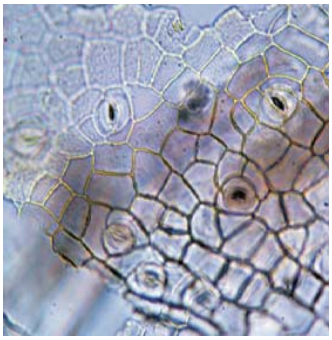
Familia Fabaceae

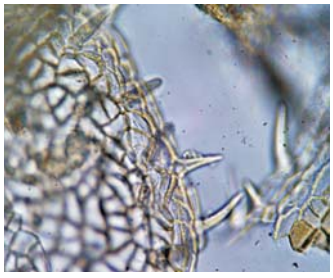
Acacia aroma

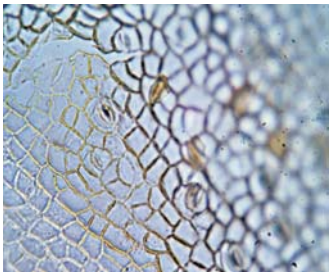
Hoja











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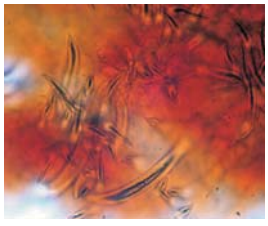
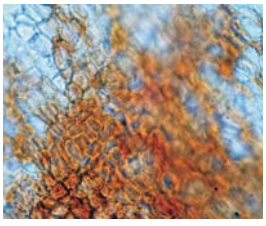
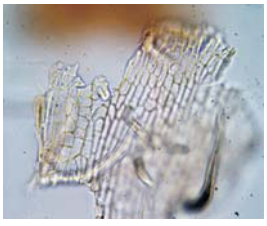


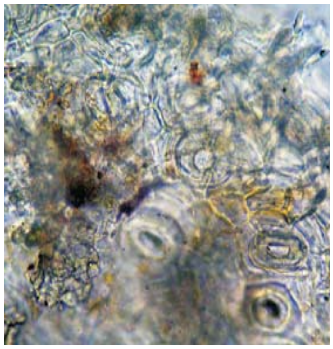


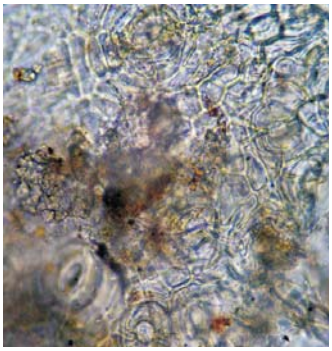


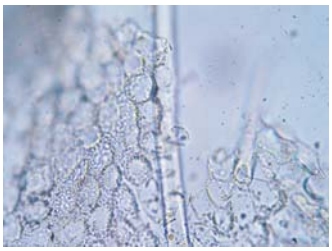
Familia Fabaceae

Acacia furcatispina

Hoja







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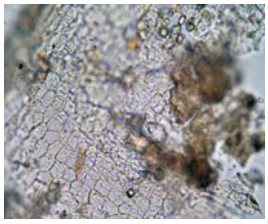
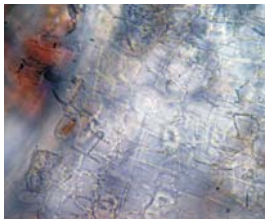
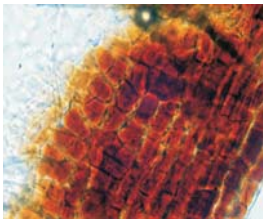
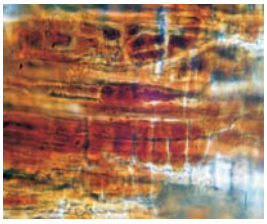




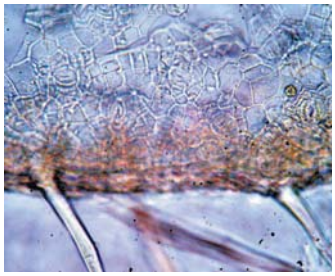


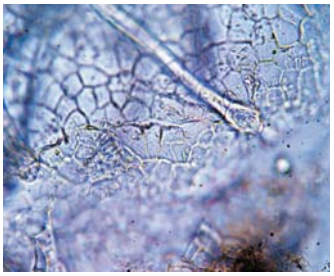


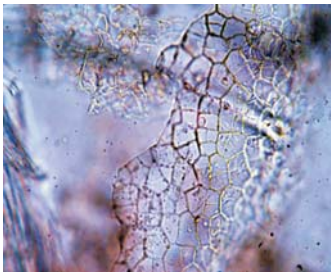
Familia Fabaceae

Cercidium praecox

Hoja







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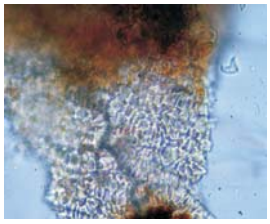
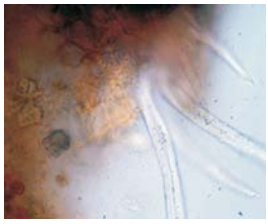
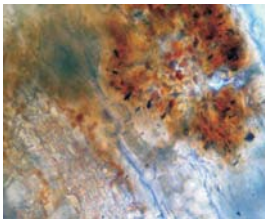
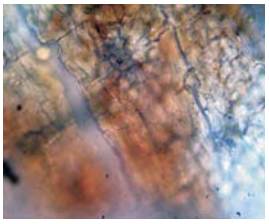




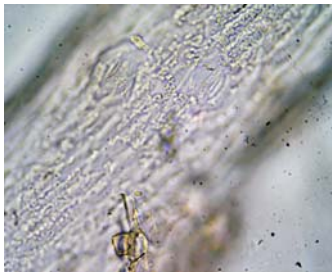


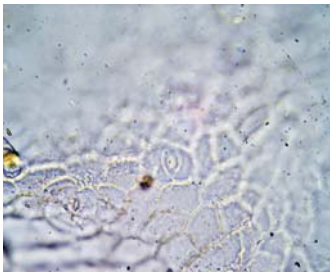


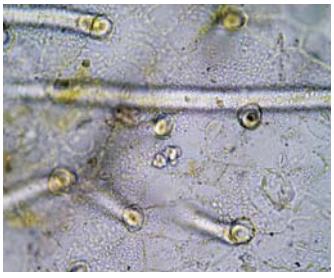
Familia Fabaceae

Geoffroea decorticans

Hoja







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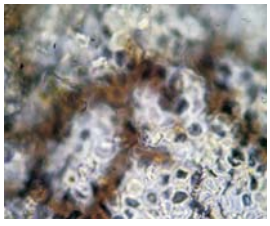
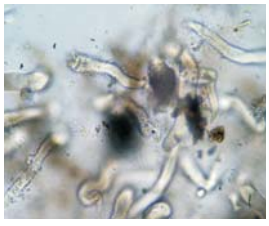
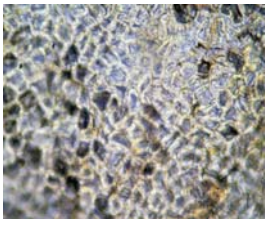
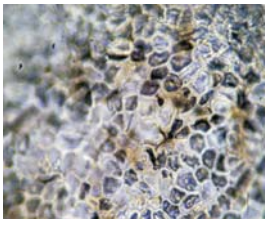




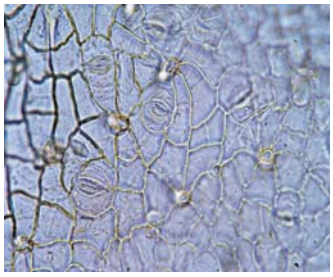


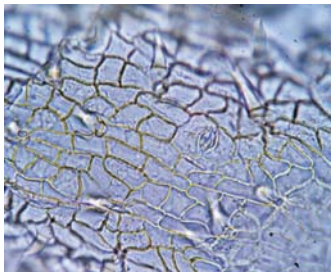


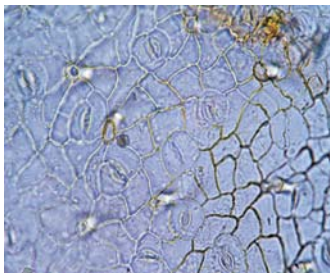
Familia Fabaceae

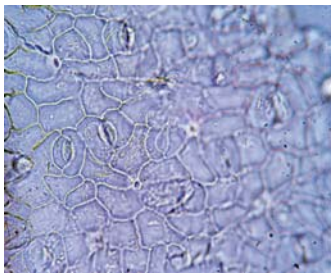
Prosopis flexuosa

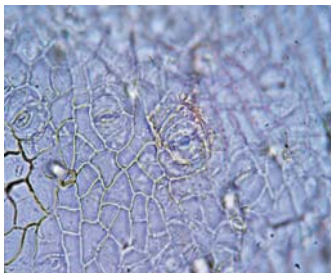
Hoja











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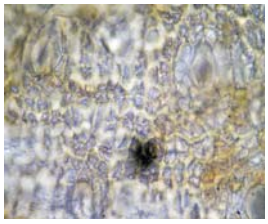
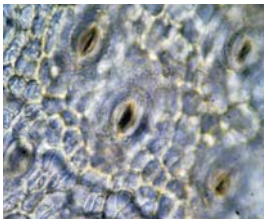
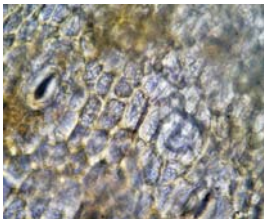
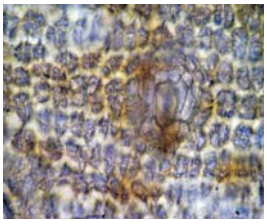


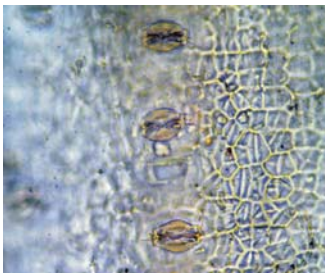


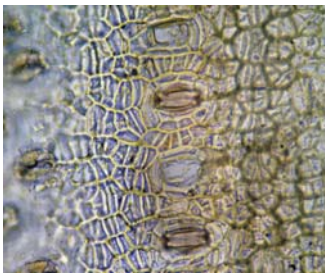


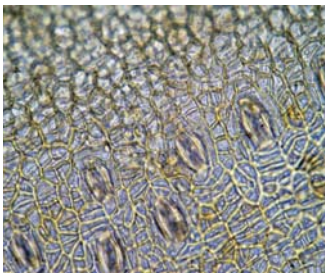


Familia Fabaceae

Prosopis sericantha







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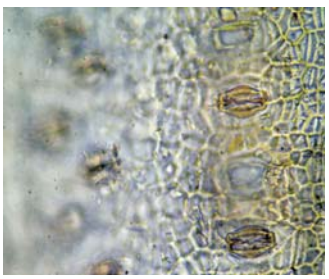
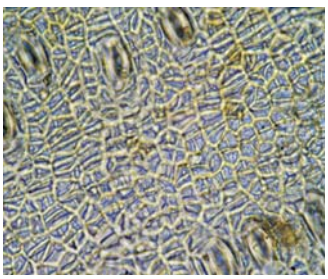
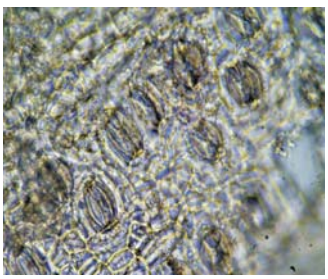


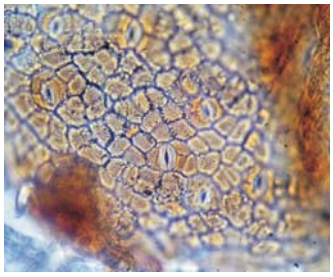


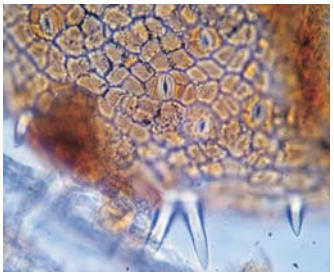


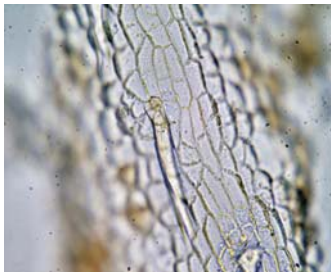
Familia Fabaceae

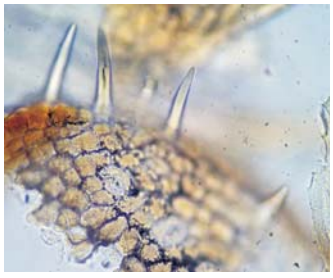
Prosopis torquata

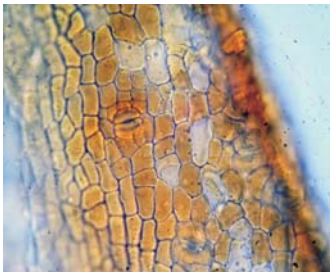
Hoja

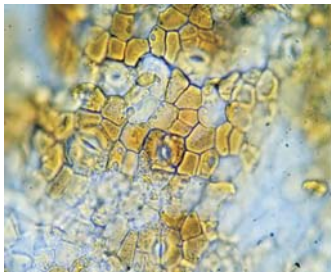












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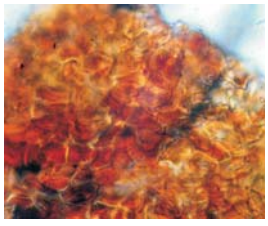
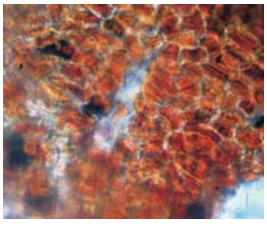
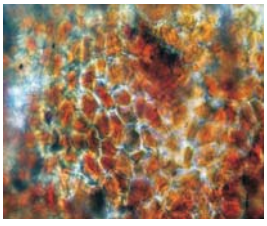
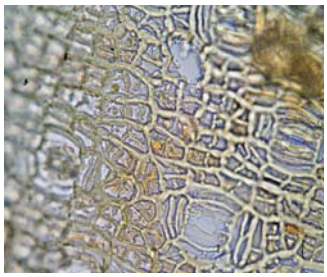


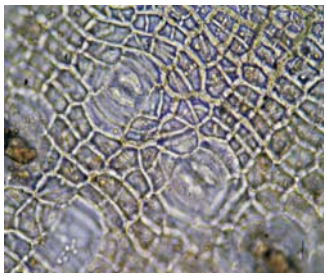


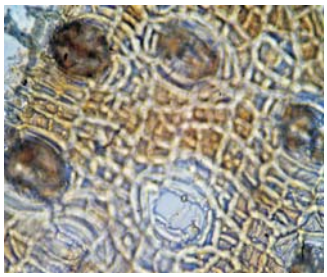


Familia Fabaceae

Senna aphyla







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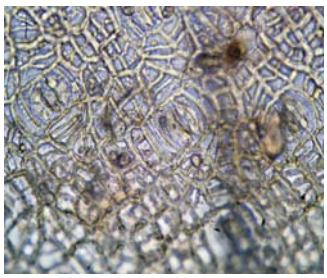
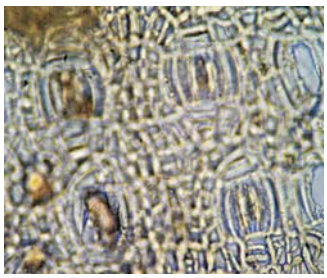
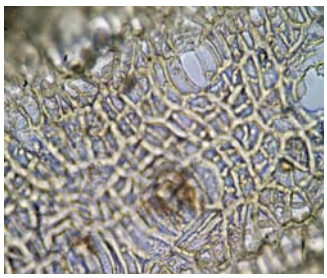


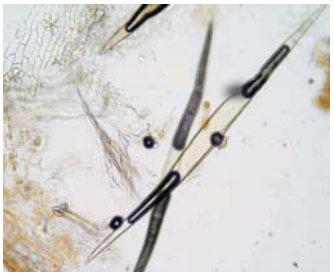


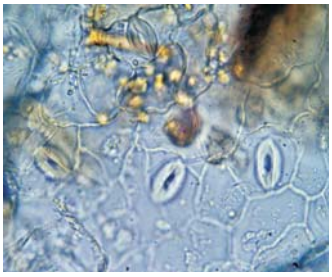


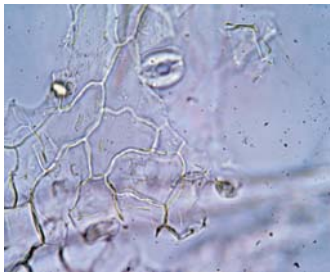
Familia Malpighiaceae

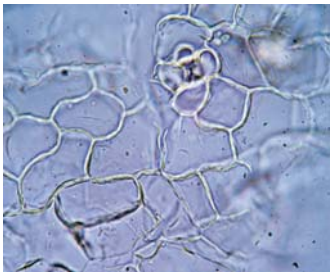
Tricomaria usillo

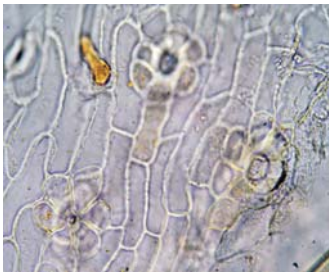
Hoja











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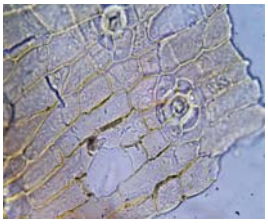
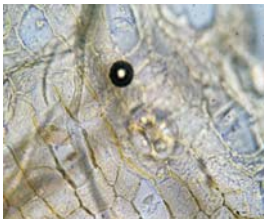
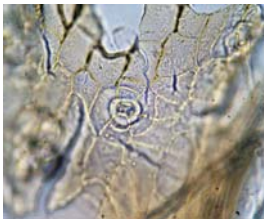


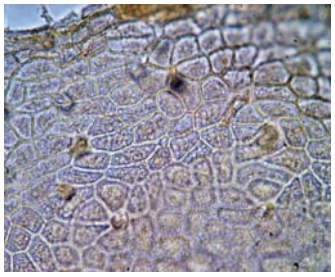


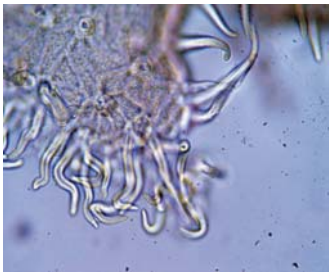


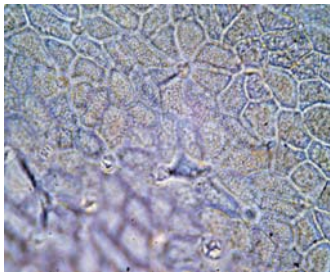
Familia Rhamnaceae

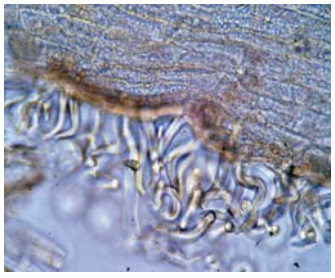
Condalia microphylla

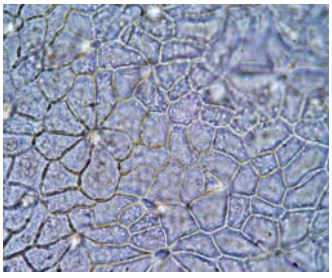
Hoja

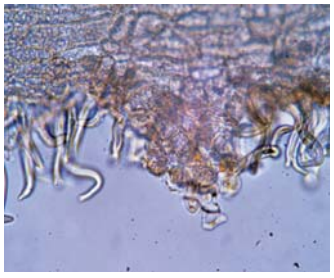












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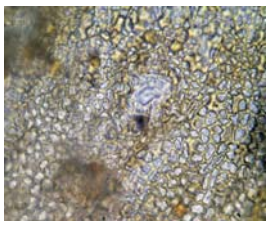
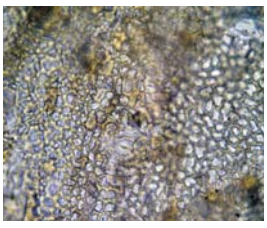
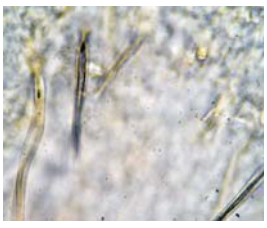
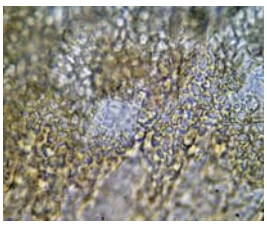




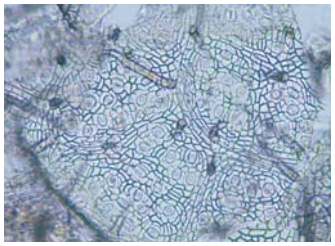


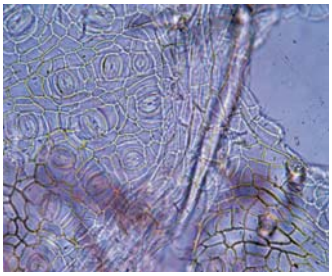


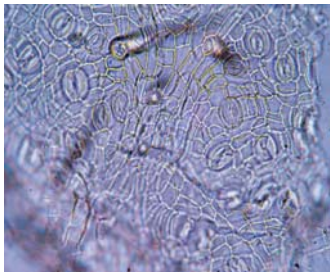
Familia Rhamnaceae

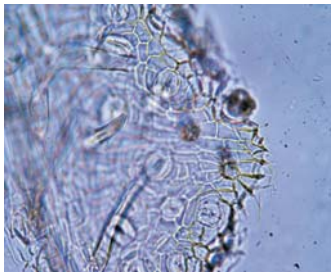
Zizyphus mistol

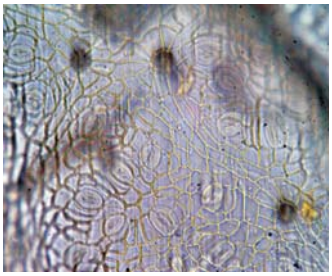
Hoja

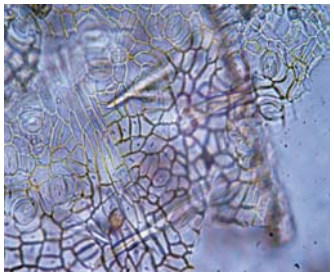












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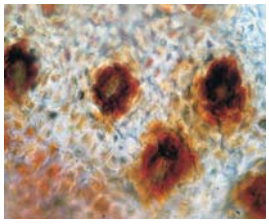
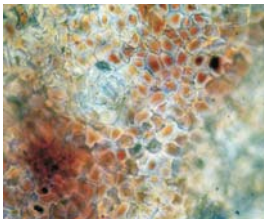
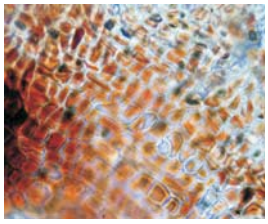
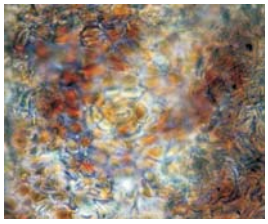




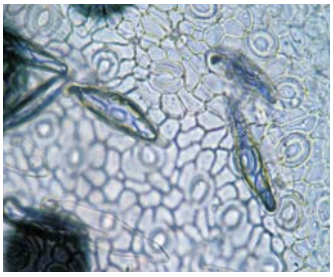


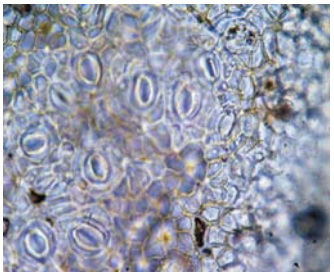


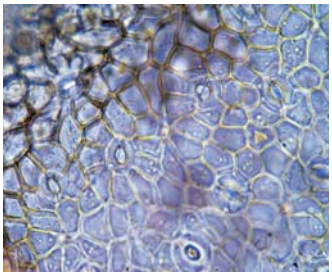
Familia Simaroubaceae

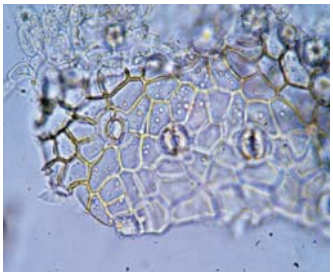
Castela coccinea

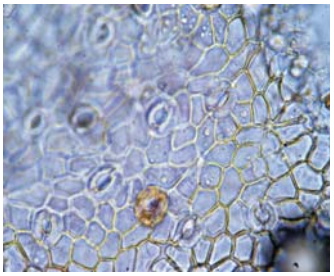
Hoja

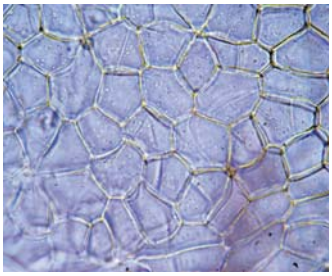












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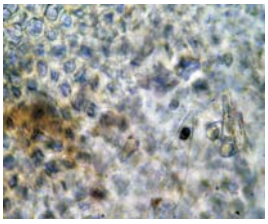
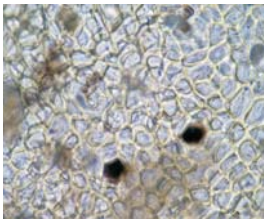
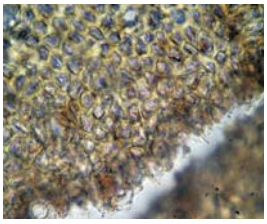
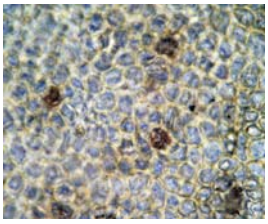




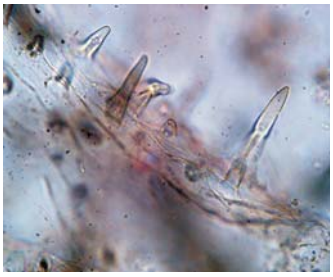


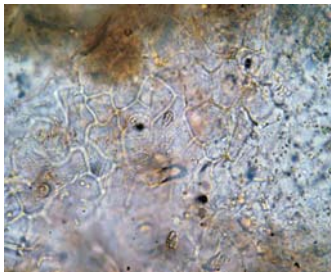


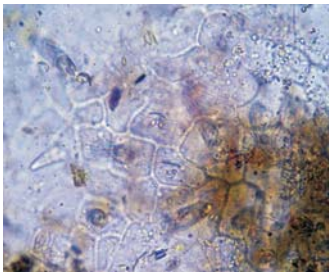
Familia Solanaceae

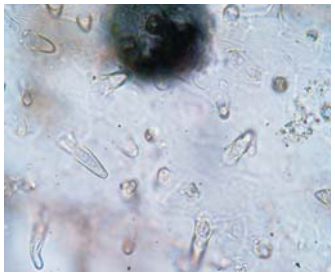
Lycium sp.

Hoja









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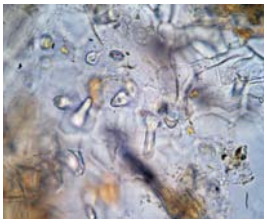
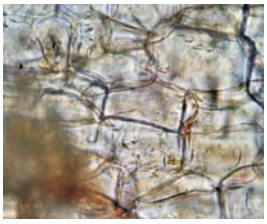
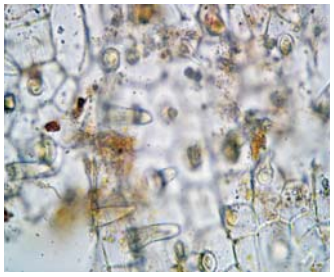


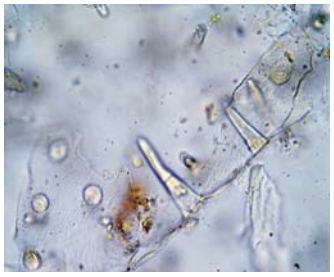


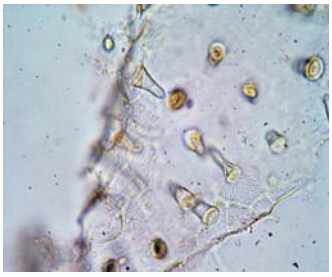
Familia Solanaceae

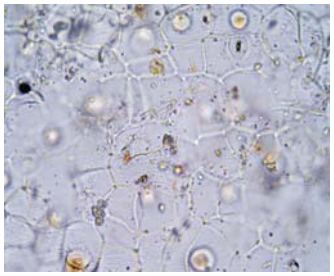
Lycium sp.

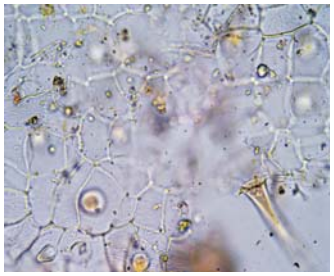
Hoja

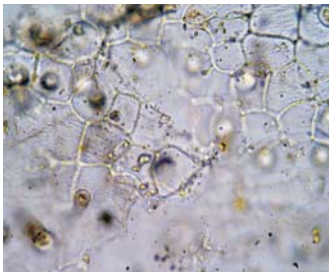












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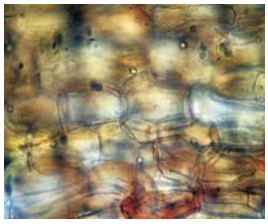
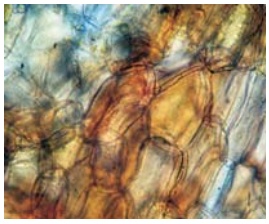
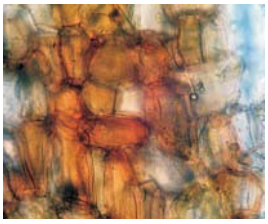


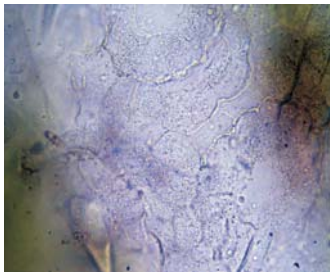


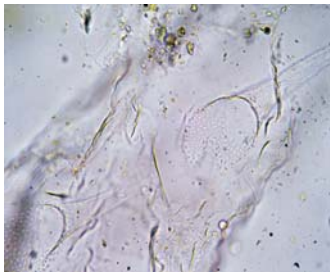


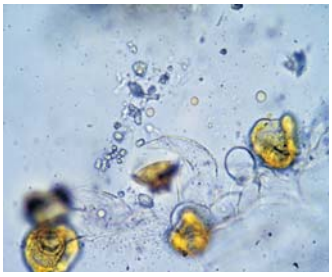
Familia Verbenaceae

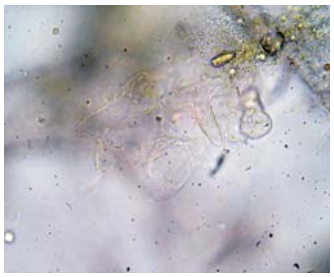
Aloysia gratissima

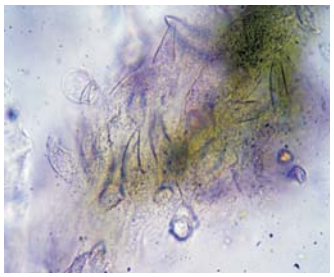
Hoja

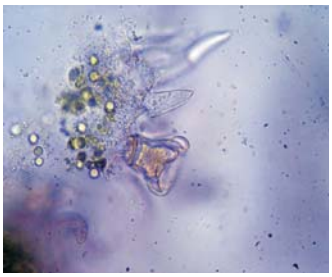












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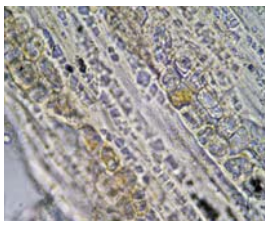
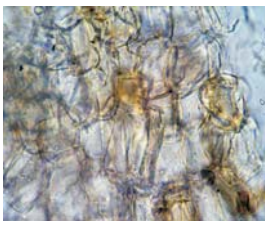
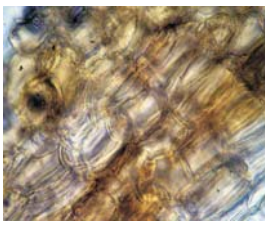


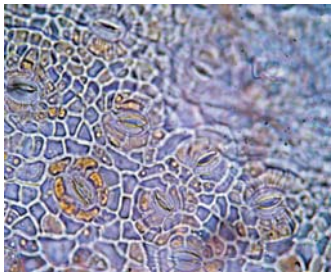


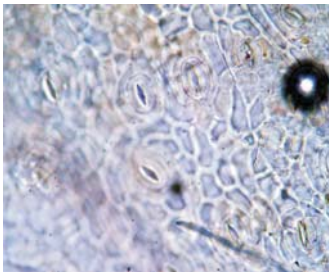


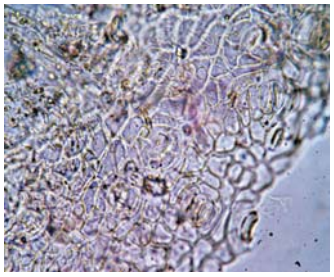
Familia Zygophyllaceae

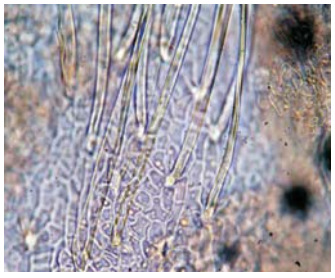
Larrea divaricata

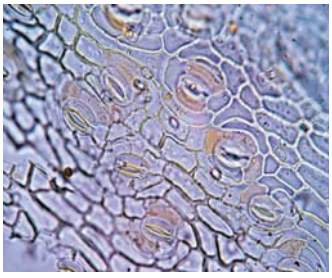
Hoja

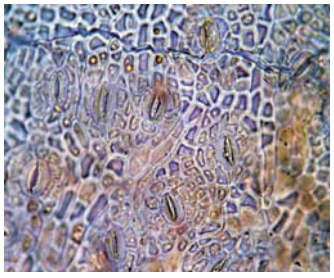












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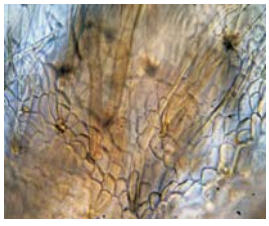

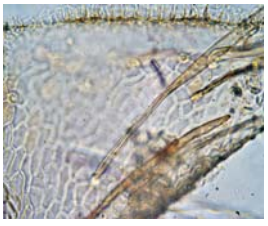

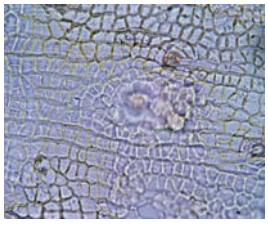

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