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### Anatomical structure and ultrastructure of the endocarp cell walls of *Argania spinosa* (L.) Skeels (Sapotaceae)

The anatomical and histochemical study of young and adult pseudo-endocarps of *Argania spinosa* (sampled from Tindouf, Algeria) shows a general structure that is similar to that of majority of stone fruits. These samples consist of tissues that contain lignified and cellulosic cell walls. The majority of the tissues are composed of sclerenchyma cells; with very thick lignified cell walls and conducting tissues. Coniferyl lignins are abundant in the majority of the lignified tissues. However, the coniferyl lignins appear at the primary xylem during lignifications. Syringyl lignins are present in small quantities. In early stage, the phenolic vacuolar inclusions at the pseudo-endocarp levels were numerous and larger. During pseudo-endocarp lignification the phenolic compounds disappear, the cell walls thickened crossed by cytoplasmic vestures and the cell content has degenerated. To this end, in addition to the increased thickness of the conducting tissues, produce a lignified sclerenchyma ring which produces numerous sclereids, the sclerenchymatous ring only consists of fibers, which make the structure less prone to breaking. The electron microscopy observation of the sclerenchyma cell walls of the young pseudo-endocarp shows polylamellate strates and cellular microfibrils in arced patterns. This architecture is observed in the cell walls of the adult endocarp only after the incubation of the tissue in methylamine. These configurations (arcs) are the result of a regular and complete rotation with a 180 degree variation in the microfibril angle; the complete and symmetrical arcs show a helical mode of construction. The observation of the sclerenchyma cells revealed the capacity of helicoidal morphogenesis to adjust itself under the influence of topological constraints, such as the presence of a large number of pit canals, which maintain symplastic transport.

### Biography

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