STUDY NO.: 15

NAME OF THE STUDY: STUDY ON INTERNAL STRUCTURES OF DORSIVENTRAL (DICOTYLEDONOUS) LEAF

1. LEAF OF MANGO

A thin section through the lamina of a leaf of mango (*Magnifera indica* of family Anacardiacae) will show the following plan of arrangement of tissues.

I. Epidermis. There are two epidermal layers on adaxial and abaxial surfaces of the leaf. Each is uniseriate, composed of a row of compactly-set tabular cells. The outerwalls are cutinized and possess thin cuticle, the thickness being more pronounced in the cells of the upper epidermis than those on the lower side. Stomata occur on the lower epidermis. Parenchyma cell in leaf is called mesophyll tissue.

II. Mesophyll. The ground tissue forming the mesophyll is differentiated into palisade and spongy cells. The palisade cells occur towards upper epidermis. They are columnar cells with scanty intercellular spaces and remain arranged more or less at right angles to the upper epidermis. Chloroplasts arc abundantly present, which particularly occur along the radial walls of the cells. There are two layers of palisade cells. The spongy cells occur towards the lower epidermis. They are quite loosely arranged with conspicuous intercellular spaces. The number of chloroplasts is naturally much smaller here, which explains the pale green color of the lower surface of the leaf.

Ill. Vascular bundles. Bundles are collateral and closed. They are located in the mesophyll. The size of the bundle depends on the position one chooses to take in making a section. A bigger bundle is composed of xylem and phloem, the former occurring towards upper epidermis and the latter towards the lower side. The xylem is made of treachery elements, and the phloem of sieve tubes and companion cells. The bundle remains surrounded by a row of colorless parenchyma cells. This band is referred to as bundle sheath or border parenchyma. Thus the bundle is not in direct contact with the mesophyll cells. Parenchyma and often collenchyma cells are present on the outer and inner sides of the bundle which may reach up to the two epidermal layers. These cells constitute what is known as bundle sheath extension.

Identification:

1. It is a **leaf** because
   - i) Vascular bundles are conjoint**,** collateraland closed.

2. It is a **dicot leaf** because
   - i) Hypostomatic - stomata on lower layer of epidermis.
   - ii) Differentiated mesophyll - tissue differentiated into palisade and spongy parenchyma.
   - iii) Parenchyma - present on both sides of vascular bundle.

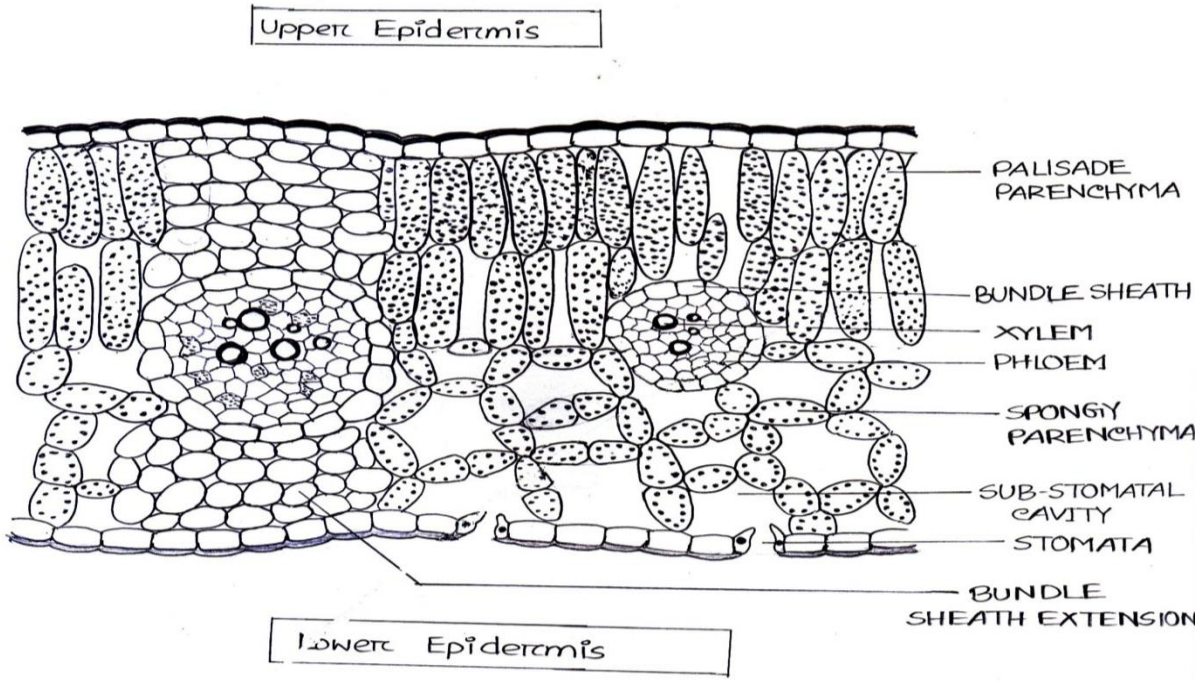

Fig : T.S. of A Portion of Leaf (mango)