ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

Vol. 6, Issue 11 , November 2019

Anatomical Structure of the Assimilating Bodies Eruca Sativa Mill.(Cem.Brassicaceae) at Introduction in the Surkhandarya Area

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ABSTRACT: This article provides information on the leaf anatomy of the indau plant. In Uzbekistan, the introduction of plants is a pressing issue. That is why we are experimenting with inddau introduction. This is because studying the leaf anatomy of indau helps to introduce it

KEY WORDS: Indau, trichome, stomata, epidermis,spongy parenchyma, collenchyma, xylem, palisade parenchyma, conducting beam, stomata,phloem.

I.INTRODUCTION

The homeland of the Indau or Eruka sativa (Eruca Sativa Mill.) Is considered to be the Western Mediterranean, but at present it can be found in a wild form in many other places: in Central Europe, Isnania, Morocco, Asia Minor and Central Asia. Indau is also widespread in the European part of Russia, in Western and Eastern Siberia (Pivovarov, 2006). Indau belongs to ancient cultures. In ancient Rome and ancient Greece, it was grown as vegetable salad asthenia. Indow leaves are distinguished by an excellent peculiar aroma and pungent taste, which for some aseotsirovatsya with nut and mustard, for others, with the taste of fried game.

They contain up to 14% solids, mustard oils, leaves are rich in the most important vitamins of the group. B, antioxidant vitamins (C, A, K, P, N), folic acid. An important feature is the high content of salts of potassium, calcium, as well as the vital salts of phosphorus, iron, iodine. All this determines the dietary value of indow (Vigorov 1969, Spirichev 2004, Kursheva Jh.V., 2009). Indau leaves contain 700-835 mcg / kg iodine, 128-132 mcg / kg, selenium 151-160.6 mg /%. Vitamin C, which significantly exceeds the indicators for other vegetable crops (Kursheva Jh.V., 2009) Indau is an important biological source of iodine and selenium. Based on this, we believe that the introduction of indau in Uzbekistan, where there is an acute lack of iodine, is the most important task of vegetable breeders. Research on the introduction of indau has been carried out since 2016 at the Surkhandarya Scientific Experimental Station of the Research Institute of Vegetable-Gourds and Potatoes. As part of this study, we studied the anatomical structure of assimilating indow organs in southern Uzbekistan. **Eruca sativa Mill**. - an annual plant. The stem is straight, branched, 15-75 cm tall. The leaves are fleshy, pubescent with scattered simple hairs, less often bare; lower lyrely pinnately dissected. Sepals 9-12 mm long, pubescent with scattered simple hairs, external at apex with small horns. Petals 15-22 mm long, with violet or brown veins, back ovate-wedge-shaped, sometimes with a notch at the top. The stalks are thick, almost pressed against the stem. Pods 2-3 cm long, oval-oblong, slightly compressed, not tuberous, pubescent downward directed, spaced rigid spines; spout compressed, xiphoid, 5-10 mm long. Seeds are biline, 1.5-3 mm long and 1-2.5 mm wide, light brown. It blooms and bears fruit from late April to early June. General distribution: Central Asia, the south of the European part of the former USSR, the Caucasus, Siberia, Middle-earth, Iran, Afghanistan, India (Flora of Uzbekistan, 1955).

II. METHODOLOGY

Along with the morphological description, assimilating organs (leaf, petiole) were fixed in 70^0 ethanol for anatomical study. The epidermis was studied on paradermal and transverse sections, transverse sections of the leaf through the middle, petiole - base. Description of the main tissues and cells is given according to K. Esau (1969), N.S. Kiseleva

ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

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(1971), the epidermis according to S.F. Zakharevich (1954). Manual preparations were stained with methylene blue, followed by gluing in glycerol-gelatin (2004). Microphotographs were taken with a *Canon* A123 digital camera microphotograph with a *Motic B1-220A-3 microscope.*

The anatomical structure of the assimilating organs of E.sativa has not been studied. This determines the relevance and novelty of our research. The aim of the research is to study the anatomical structure of the assimilating organs of E. Sativa and determine their diagnostic features. **The leaves** of E.sativa are fleshy, pubescent with scattered simple hairs, less often bare; lower lyre-cirrus dissected. On the paradermal section, epidermal cells on both sides of the leaf are flattened and elongated, polygonal. The outlines of the epidermal cells are large, sinuous. However, the upper epidermis is somewhat different from the lower epidermis. The cells of the upper epidermis are larger and slightly sinuous than the lower. Upper lateral leafy pubescent, scattered simple unicellular hairs.

The leaves are amphistomatic, stomata are located on both sides of the leaf blade, located transversely to the longitudinal axis of the leaf. The upper epidermis has significantly fewer stomata compared to the lower epidermis. All this leads to a reduction in water loss from the surface of the sheet. The closing stomata cells on both sides of the leaf are almost the same length. Anomocytic, anisocytic, and diacytic types of stomata were noted. Occasionally, a hemiparacitic type of stomata is found. The stomata are oval, elongated-oval and surrounded by 3-6 cells. The predominant type of stomatal apparatus is anomocytic. Stomata are submerged (Figures 1, 2).

The middle part of the mesophyllis of the leaf of E. Sativa is on the cross section of the dorsiventral type, which is represented by palisade cells located under the upper epidermis of the leaf mesophyll; spongy cells are the lower-level epidermis of the leaf mesophyll.

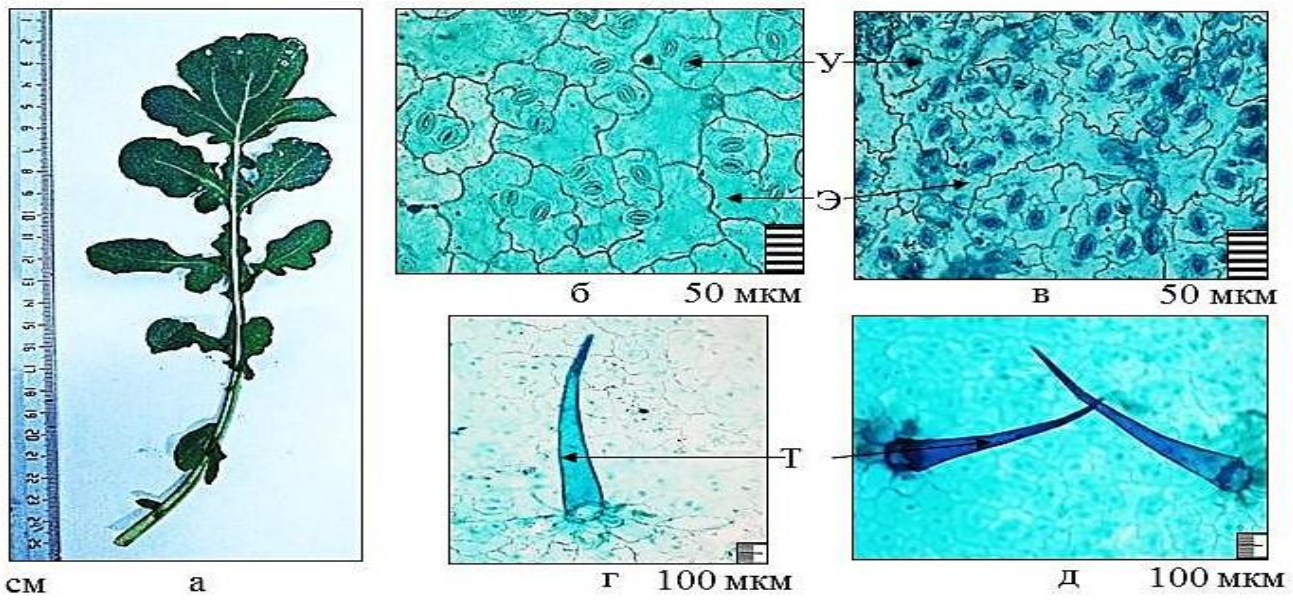

Figure - 1. Anatomical structure of the epidermis of the leaf Eruca sativa: а - general view of the sheet; б - upper (adaxial) epidermis; в - the lower (abaxial) epidermis; г-д- trichome of the upper epidermis of the leaf. **Legend:** Т - trichome, У - stomata, Э - epidermis.

When considering a slice at high magnification, the upper and lower cells of the epidermis consist of one row of oval cells. Between the upper and lower epidermis there is an assimilation tissue consisting of palisade and spongy cells.

The palisade is chlorophyll-bearing parenchyma, consisting of three rows and located under the upper epidermis of the leaf mesophyll (Figure 2).

The spongy chlorophyll-bearing parenchyma, consisting of three or four rows, is located under the palisade parenchyma and above the lower epidermis of the leaf mesophyll. The spongy parenchyma is round, small-cell with small intercellular spaces. In the cells of the palisade and spongy parenchyma, glycoside crystals, starch grains and certain chemicals are found. Between palisade and spongy cells are lateral conductive bundles. Conductive bundles are

ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

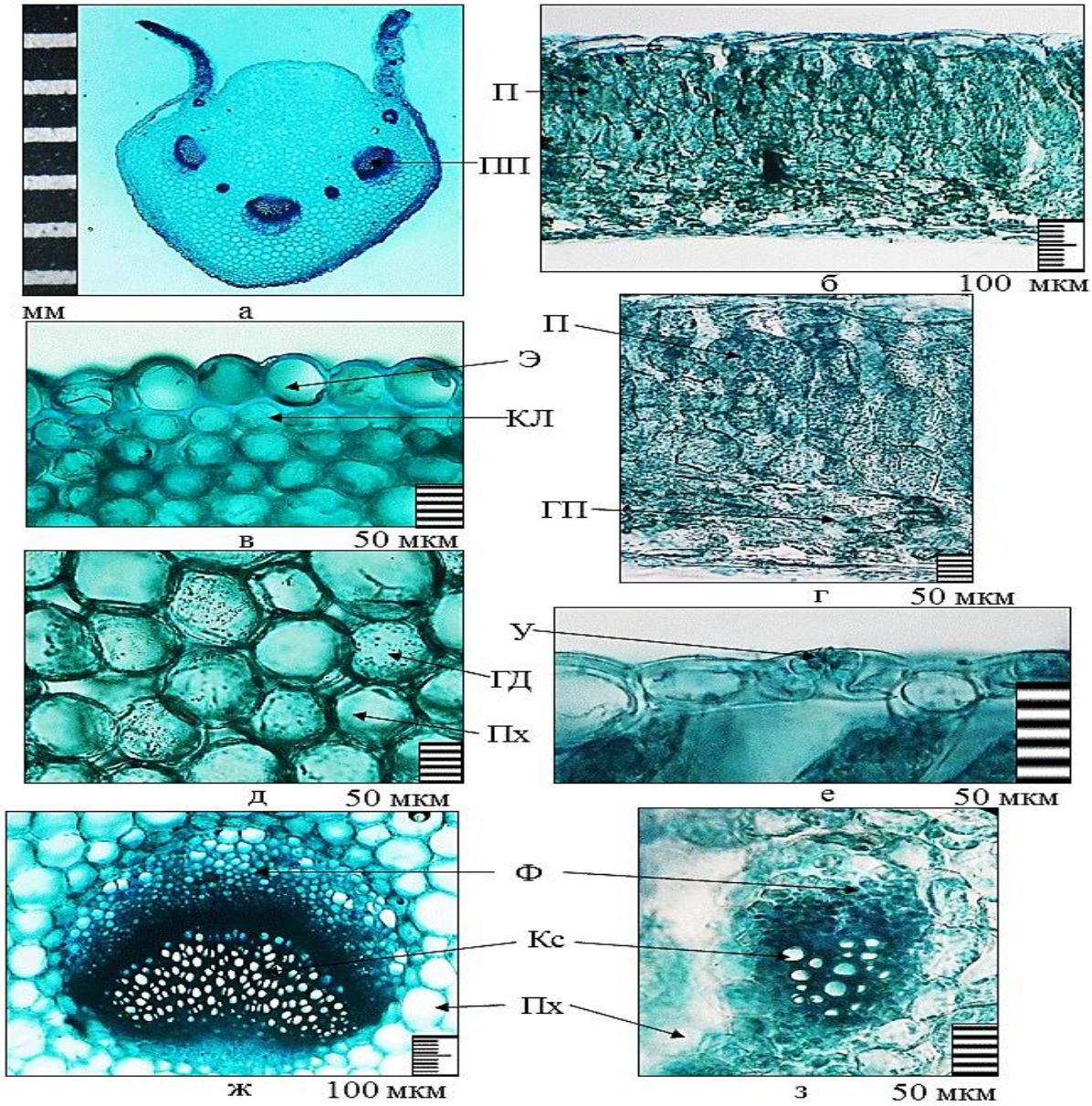

Figure - 2. **Anatomical structure of the leaf Eruca sativa**: a-general view of the main in of the leaf mesophyll; б - leaf mesophyll; в-г - detail; d - parenchymal and hydrocytic cells; e - unloaded stomata; ж-з - conducting bundles. **Symbols:** ГД - hydrocyte cells, ГП - spongy parenchyma, КЛ - collenchyma, Кс - xylem, П - palisade parenchyma, ПП - conducting beam, Пх - parenchyma cells, У - stomata, F - phloem , E - epidermis.

Under the collenchyma are rounded oval parenchymal cells. Conductive bundles are located in the central part of the petiole, closed collateral type, kidney-shaped, consisting of phloem and xylem. Large conductive bundles include 5-6 bundles, single bundles are relatively small. Large and small conductive beams alternate with each other. Parenchymal cells are thin-walled, large and small-cell; among the parenchymal cells, hydrocyte cells are found (Figure 3).

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International Journal of Advanced Research in Science, Engineering and Technology
Vol. 6, Issue 11 , November 2019

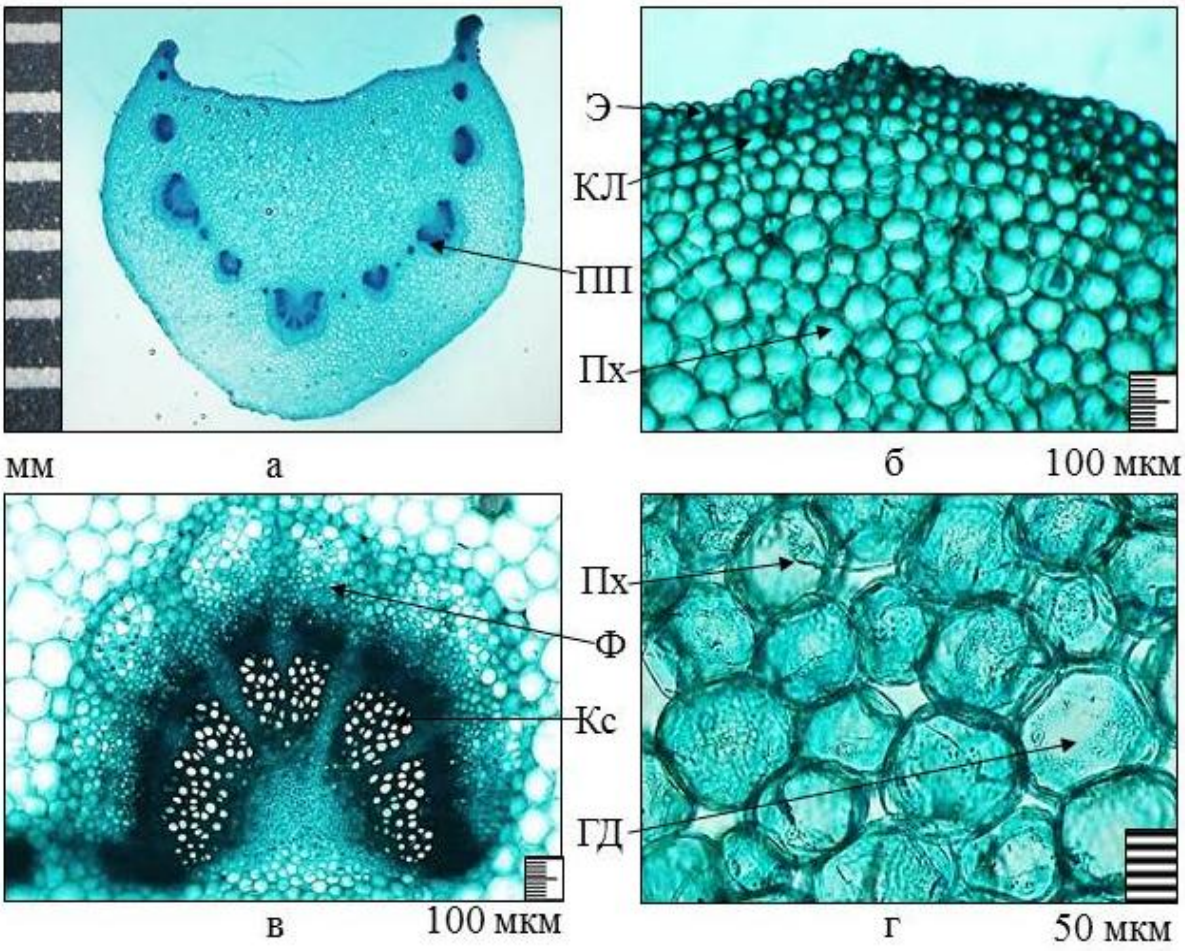

Figure - 3. Anatomical structure of the petiole of the leaf Eruca sativa: а - general view, б - detail, в - collateral conductive beam, г- parenchymal and hydrocyte cells. **Symbols**: ГД - hydrocyte cells, КЛ - collenchyma, Кс - xylem, ПП - conducting bundle, Пх - parenchymal cells, Ф - phloem, Э - epidermis.

This, for the first time during the introduction in the Surkhandarya region, the anatomical structure of the assimilating organs of Eruca sativa was studied. The following diagnostic features were identified: dorsiventral type of leaf mesophyll; thin-walled outer walls of the epidermis; unloaded stomata of anomocytic, anisocytic and diacytic types; chlorophyll-bearing palisade and spongy parenchyma cells; closed collateral type of conductive bundles; thin-walled parenchymal cells and the presence of hydrocyte cells in the main leaf vein. Petiole of the leaf of the parenchymal-bundle type, platelet collenchyma cells are located under the epidermis. In the center of the petiole there is a conductive bunch of a closed collateral type. Large conductive beams include 5-6 beams. Such a bundle structure is characteristic of this genus and family. These identified diagnostic signs can serve to identify plant materials.

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