


MSC BOTANY: I SEMESTER

PALYNOLGY: INTRODUCTION

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PALYNOLOGY

What is palynology?



- *Palynology* (*palynos*, dust) is the science of pollen grains and spores.
- Pollen grains are male gametophytes or reproductive cells of a flowering plant.

- ❑ The term palynology was introduced by Hyde and Williams in 1944
- ❑ Hyde and Williams chose palynology on the basis of the Greek words palynein meaning 'to sprinkle' or scatter and pale meaning 'dust' (similar to the Latin word pollen and also dust like living structures the spores)
- ❑ Thus palynology is the study of various aspects of pollen grains as well as spores

□ Palynology is divided into **basic palynology and applied palynology**

□ **Basic Palynology** deals with pollen and spore morphology, physical and chemical properties of pollen wall, correlation of palynology with other branches of biology, such as cytology, taxonomy, etc.

- ❑ **Applied palynology** deals with application of palynology in different fields.
- ❑ Hence it comprises geo or palaeo palynology (study of fossil pollen & spores), aeropalynology (frequency & distribution of pollen in the air), mellito or mellisopalynology (spores in honey), latropalynology (related to diseases and spores), pharmacopalynology (spores in drugs), forensic palynology (role in crime

- ❖ Palynology has numerous applications
- ❖ Fossil pollen analysis
(palaeopalynology)
- ❖ is used to identify the plant taxa,
from which, can be deduced :
- ❖ vegetation variations with time
- ❖ climate and its temporal variation
- ❖ evidence of human activities

- ❖ **dating of sediment levels and ages of artefacts found**
- ❖ **what people may have eaten**
- ❖ **oil deposit locations**
- ❖ **Honey type, and location of origin, can be indicated by the pollen found in the honey (melissopalynology).**

- ❖ **Inhalant allergy sufferers can be advised of high pollen counts in the air (Aeropalynology)**
- ❖ **Forensic investigations can be aided by determining if an object has been in a**
- ❖ **certain general location by identifying the pollen grains attached**

- Aeropalynology: distribution and frequency of distribution of pollen and spores in the air
- It has great importance and high level of application in medicine and forestry
- Hence it is related to Latropalynology
- Latropalynology is the study of allergy by pollen and its treatment, etc.

- It is proved that air-borne pollen grains cause allergies like hay-fever and seasonal asthma
- Information on the type of pollen in the air helps in the determination of allergens
- Hay fever is found to be caused by the pollen grains of some weeds and grasses and forest trees

- **Mellitopalynology :study and analysis of spores in honey**
- **Pollen grains form one of the important food item of honey bees**
- **These are chief sources of proteins, minerals and vitamins for the growth and development of larvae and young ones**
- **Mellitopalynology helps to detect adulteration of honey in the market**

- **A trained Mellittopalynologist can easily distinguish the honey from different localities**
- **The honey containing more than 50% pollen from a single species is said to be unifloral honey**
- **Honey with various kinds of pollen is called multifloral honey**

- ❖ Forensic palynology :Study of pollen grains as an aid in crime detection
- ❖ Pollen grains reflect the vegetation of an area and its surroundings
- ❖ It has been possible to locate the site of crime by studying the pollen in the samples collected from the dead body, mud stuck on shoes, clothes, etc.
- ❖ The analysis of these samples provides sufficient information on the site of the crime



Gunnar Erdtman



Parmeshwaran Krishnan Kutty Nair- PKK NAIR
the father of Indian palynology

Important centres of palynological study are:

1. NATIONAL BOTANICAL RESEARCH INSTITUTE (NBRI), LUCKNOW

2. BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY, LUCKNOW

3. OSMANIA UNIVERSITY, HYDERABAD

4. BOSE INSTITUTE, CALCUTTA

Thank you!

The image features the words "Thank you!" rendered in a highly decorative, hand-drawn style. The letters are thick and bubbly, with each letter filled with a different color and adorned with intricate patterns. The 'T' is yellow with a red zig-zag pattern. The 'h' is orange with a red zig-zag. The 'a' is green with a black dotted border. The 'n' is purple with a red zig-zag. The 'k' is orange with a red zig-zag. The 'y' is green with a black dotted border. The 'o' is pink with a black dotted border. The 'u' is blue with a purple zig-zag. The exclamation point is blue with a green zig-zag. Several stylized flowers are scattered around the text: a blue flower with a purple center is above the 'k'; a blue flower with a purple center is to the right of the 'k'; a pink flower with a yellow center and white dashed lines is in front of the 'y'; a blue flower with a purple center is to the left of the 'y'; and a small blue flower with a purple center is above the 'u'. The entire illustration is set against a light blue background with a white border.