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PLANTAGO L. ТУРКУМ ТУРЛАРИНИНГ MORFO-PALINOLOGIK ХУСУСИЯТЛАРИ

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Annotatsiya: Hozirgi kunda dunyo aholisi allergik kasalliklardan aziyat chekmoqda. O'simlik gulchaglari ham allergiya. Shuning uchun bizning tadqiqotimiz allergiya keltirib chiqaradigan o'simliklarga qaratilgan. Ushbu maqolada *Plantago L.* turkumiga mansub *Plantago lanceolata L.* va *Plantago major L.* ning gulchaglari tasnifi, allergik ta'sir darajasi va morfo-palinologik xususiyatlari tahlil qilingan, o'simliklar oilasiga (*Plantaginaceae L.*) xos bo'lgan porat va pantoporat kabi xususiyatlarga ega ekanligi aniqlandi.

Kalit so'zlar: allergenlar, ekzin, o't o'simliklar, mikroskopiya, palinologiya, porat, pantoporat.

МОРФО-ПАЛИНОЛОГИЧЕСКАЯ ХАРАКТЕРИСТИКА ВИДОВ *PLANTAGO L.*

Аннотация: В настоящее время население мира страдает от аллергических заболеваний. Растительная пыльца также вызывает аллергию. Вот почему наше исследование сосредоточено на растениях, которые вызывают аллергию. В этой статье были проанализированы классификация пыльцы, уровень аллергического эффекта и морфо-палинологические характеристики *Plantago lanceolata L.* и *Plantago major L.*, принадлежащие к роду *Plantago L.* Зерна пыльцы показали различные формы и текстуры поверхности под световым микроскопом, и было обнаружено, что они обладают определенными свойствами, такими как порат и пантопорат, типичные для семейств растений (*Plantaginaceae L.*).

Ключевые слова: аллергены, экзин, травянистая, микроскопия, палинология, порат, пантопорат.

MORPHO-PALYNOLOGICAL CHARACTERISTICS OF *PLANTAGO* L. SPECIES

Abstract: Nowadays, the population of the world is suffering from allergic diseases. Plant pollen also causes allergies. That's why our research is focused on plants that cause allergies. In this article, pollen classification, level of allergic effect and morphopalynological characteristics of *Plantago lanceolata* L. and *Plantago major* L., belonging to the genus *Plantago* L., were analyzed. Pollen grains showed different shapes and surface textures under a light microscope, and it was found that they have specific properties such as porate and pantoporate, typical of plant families (Plantaginaceae L.).

Key words: allergens, exine, herbaceous, microscopy, palynology, porate, pantoporate.

INTRODUCTION

The release of large amounts of pollen grains in the atmosphere by the male reproductive units of plants for the purpose of pollination is a natural phenomenon. However, during this release pollen grains come into contact with humans, resulting in allergic reactions symptomised by breathlessness and running and itching of the nose and eyes, which is called pollinosis [2,3,9].

The state of the atmosphere may also be mediated by influencing the health and well-being of a person. One of the aspects of this influence is the flowering and dusting of plants, which to a certain extent depends on weather and climatic conditions. According to the World Health Organization, about 15% of the population of Europe suffers from allergic reactions (pollinosis) [8].

MATERIAL AND METHODS

Plantago lanceolata L. and *Plantago major* L. Species distributed in Andijan were named through various weblink sources [5,6]. The biology and ecology of these taxa was carried out using the flora of Uzbekistan and various indicators [4,7,10,11].

A standard protocol for the light microscopy of allergenic pollen involves several key steps to ensure accurate identification and analysis. First, pollen samples are collected using a volumetric spore trap or similar device, ensuring representation across different times and locations to capture seasonal variations. The collected samples are then prepared for microscopy by mounting on glass slides using a suitable mounting medium, such as glycerin jelly or a commercial pollen mounting fluid. Prior to mounting, samples may be stained with basic dyes like acetocarmine or fuchsin to enhance contrast and facilitate identification of pollen grains under the microscope. Once mounted, pollen grains are observed under a light microscope at various magnifications, typically starting with low magnification (e.g., 100x) to locate and count pollen grains, followed by higher magnifications (e.g., 400x) for detailed morphological analysis. Reference materials such as pollen atlases and taxonomic keys are used to aid in the identification of pollen grains based on their size, shape, aperture type, and ornamentation [1].

RESULTS AND DISCUSSION

Morphological Description of Allergenic Species

Plantago lanceolata L.

Perennial herb. Height 10-70 cm. Leaves are 3-5-veined, 4-20 cm long, 0.4-3.5 cm wide. The capsule is elongated, 2.5-3 mm. It blooms in June and September. It grows among ditches and roadsides, gardens and various crops. It is distributed in desert, hill and mountain zone. Leaves are ovate or broad-ovate. Cylindrical spike with a ball, 4-25 cm.



Plantago major L.

A perennial herb. Height 30-50-(70) cm. Leaves are 3-9-veined, 2-25 cm long, 1.5-14 cm wide. The pod is ovoid or ovoid-conical, 3-4 mm. It grows in ditches, roadsides, rivers, springs, swamps, gardens and fields.

The degree of allergic effect of *Plantago lanceolata* L. is high (***), the degree of allergic effect of *Plantago major* L. is medium (**). The flowering period is from June to September. Table 1.

Table 1

Systematic analysis of allergenic taxa and flowering phenology

Family	Genus	Taxa	Flowering phenology	General appearance of the plant
Plantaginaceae	<i>Plantago</i> L.	<i>Plantago lanceolata</i>	June-September	
		<i>Plantago major</i>	June-September	

Morpho-palynological Features

LM pollen grains of *Plantago lanceolata* L. appear as small, spherical monads with three furrows and a smooth exine surface. Scanning electron microscopy reveals a finely reticulate (scabrate) exine texture, characteristic of the Plantaginaceae family.

Plantaginaceae

Plantago L. (*Plantago lanceolata* L., *Plantago major* L.) has been reported to be the cause of polynosis with moderate allergic reactions. On the other hand, it has been reported to cause high allergic allergic reactions (Chapman 1986; Middleton et al., 1988). *Plantago* pollen can lead to “pollinosis”, Rodriguez-Rajo et al, even if it is low in the atmosphere.

The Habitat of *Plantago* taxa in Andijan: grows on the side of the roads and roadside, river and spring edges, gardens and among various crops.

Plantago lanceolata L. Pollen class: porate, aperture condition: porate, pantoporate, pollen unit: monad.

Plantago major L. Pollen class: porate, aperture condition: porate, pantoporate, pollen unit: monad. Pollen grains differ in size, this difference can be seen in Figure 1.

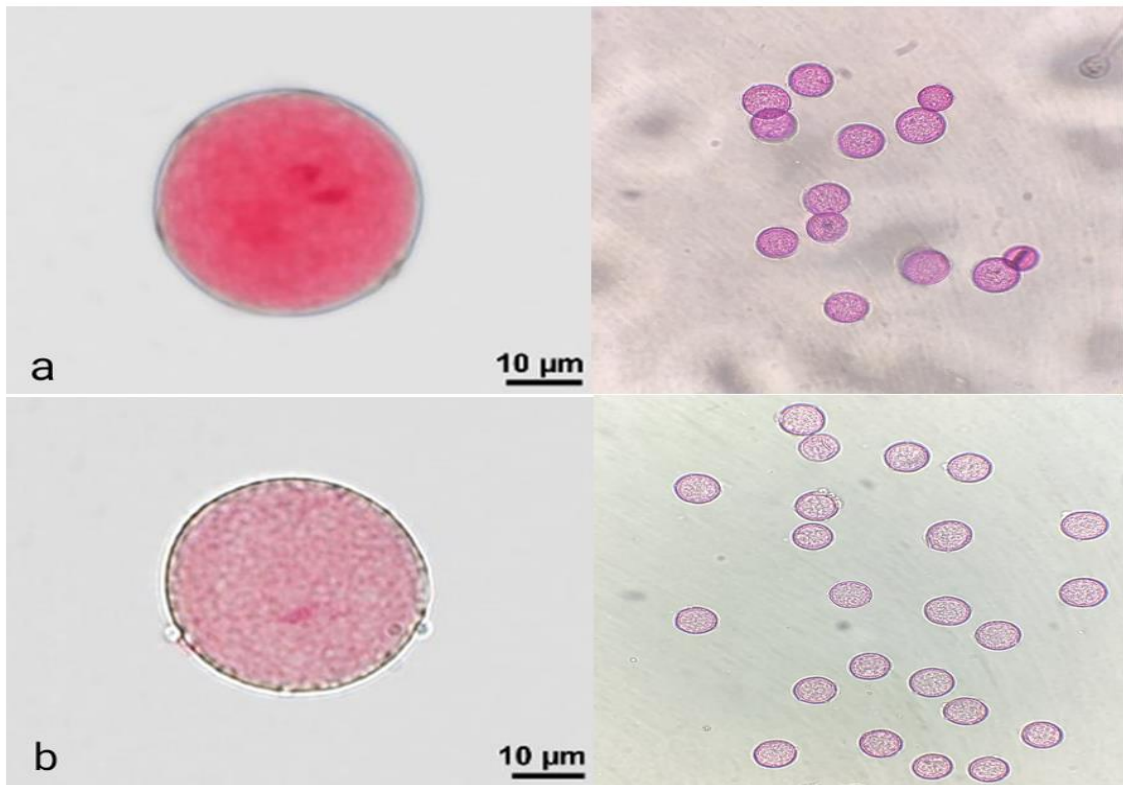


Figure 1. Light microscopic pollen grains of (a) *Plantago lanceolata* (b) *Plantago major*

CONCLUSION

In short, *Plantago lanceolata* is high (***), *Plantago major* L.'s allergic effects of *Plantago major* L. Medium (**). Standard preparations were prepared from plant pollen and morpho-palenological characteristics of pollen were highlighted. In species belonging to the genus *Plantago* L., the classification of pollen has a porate structure, the state of the diaphragm is porate, pantoporate, the pollen unit is monad.

LITERATURES

1. Abbas, M., Shaheen, S., Arshad, A., Ali, M., Rasool, B., & Rasool, G. (2022). Comparative light and scanning electron microscopic studies of pollen of two marijuana species causing allergies. *Microscopy Research and Technique*, 85(9), 3181-3186.
2. Bousquet J (2001). Epidemiology and genetics. Aria workshop report. *Journal of Allergy and Clinical Immunology* 108: 153–161.
3. D'Amato G, Ruffilli A & Ortolani C (1991). Allergenic significance of *Parietaria* (*Pellitory of the wall*) pollen. In: D'Amato G, Spieksma FT, Bonini S (eds.): *Allergenic Pollen and Pollinosis in Europe*, pp.113–118. Oxford: Blackwell.
4. Grant Smith, E. (1990): *Sampling and Identifying Allergenic Pollens and Molds*. Blewstone Press, San Antonio, Texas 1990.
5. <https://powo.science.kew.org>
6. <https://www.gbif.org/search>

7. Pehlivan, S. (1995). Turkiye'nin Alerjen Polenleri Atlası.
8. WHO (2003) Phenology and human health: allergic disorders. Copenhagen, WHO Regional Office for Europe, 55 pp.
9. Wuthrich B (1989). Epidemiology of allergic diseases: Are they really on increase? International Archives of Allergy and Immunology 90: 3–10.
10. А.Ҳамидов, М.Набиев, Т.Одилов., (1987). Ўзбекистон ўсимликлари аниқлагичи
11. Флора Узбекистана. (1941-1963). - В 6 Т. – Ташкент: изд. АН УзССР.