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Overview of allergies with focus on causative agents, cross-reactivity, diagnostic methods and immunotherapy

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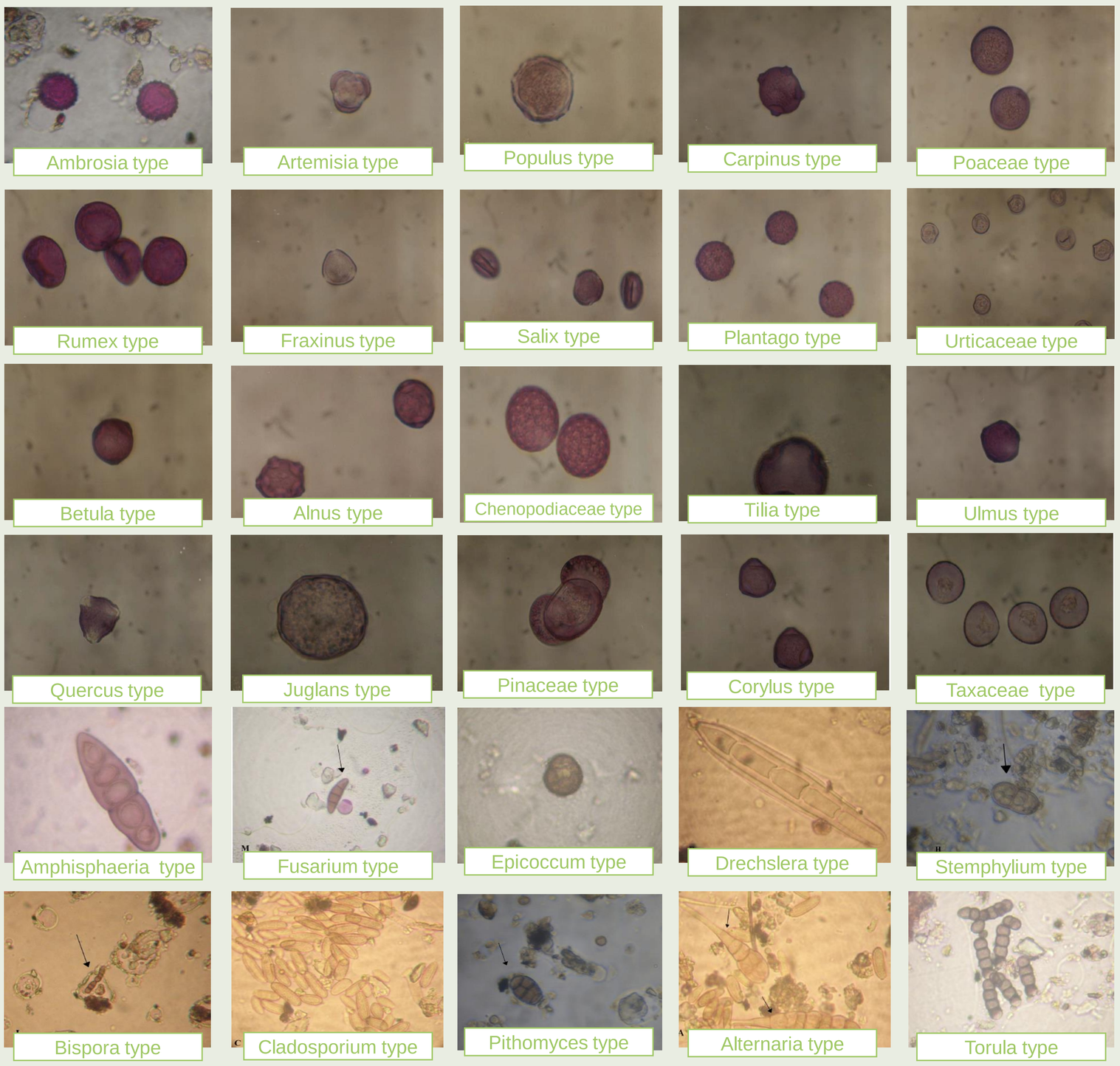
Abstract. *Allergies are exacerbated immune responses of the body to certain structures, called allergens, which under normal conditions do not elicit any response from the body. Cross-reactivity is a phenomenon that reveals the phylogenetic relationship between allergens and is important to consider when starting a diagnostic investigation in order to determine the best route of immunotherapy. The most commonly used methods to asset allergies are: skin prick test, component-resolved diagnosis, immunoglobulin E measurement assay, basophil activation test and challenge tests. Immunotherapy, unlike pharmacotherapy, induces tolerance to certain allergens, even after the completion of treatments, altering the natural course of the pathology. In this review we have classified and described allergies based on the causative agent into: pollen allergy, food allergy, dust mite allergy, fungal allergy, insect allergy, pet dander allergy and drug allergy.*



POLLEN AND FUNGI ALLERGY

- In western Romania, a number of 20 pollen types from anemophilous plants and 32 fungal spore types have been identified, these types being the main contributors of the aerobiological load. These airborne particles are captured, identified and quantified using the volumetric method, the characteristic instrument for this being the Burkard or Lanzzoni trap.

INSECT ALLERGY

- mainly caused by bees, vasps, ants, cockroaches.
- cross-reactive with crustaceans, insects, molluscs

FOOD ALLERGY

- mainly caused by shellfish, eggs, fish, milk, peanuts, soy, tree nuts, wheat
- cross-reactive with pollen

PET DANDER ALLERGY

- mainly caused by *Felis domesticus* , *Canis lupus familiaris*
- cross-reactive with other animals by the presence of: uteroglobins, arginine esterases, laterins, cystatins, lipocalins, serum albumin.

DUST MITES ALLERGY

- mainly caused by *Dermatophagoides farina*, *Dermatophagoides pteronyssinus.*
- cross-reactive with:crustaceans, insects, molluscs

DRUGS ALLERGY

- mainly caused by antibiotics, contrast agents, anaesthetics, non-steroidal anti-inflammatory drugs, monoclonal antibodies

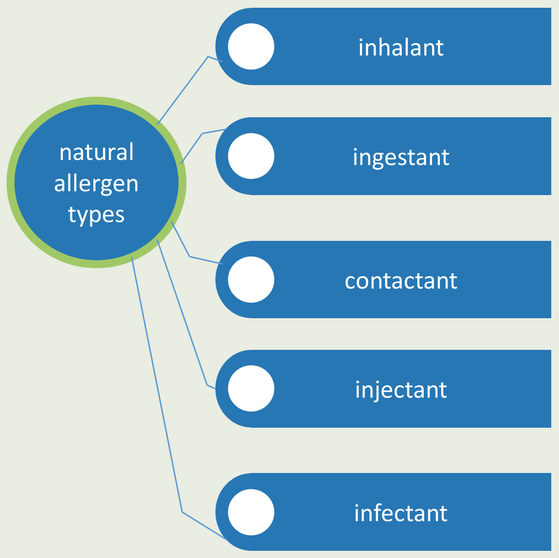


FIG. 3. Main natural allergen types

OCUPATIONAL ALLERGIES

Most exposed work places: farmers (beekeeper, harvest and production workers, greenhouse workers), builders, machine handling personnel, bakers.
Management strategies: limiting exposure to causative allergens, applying control methods, substituting allergens with non-immunogenic structures, proper use of protective equipment.

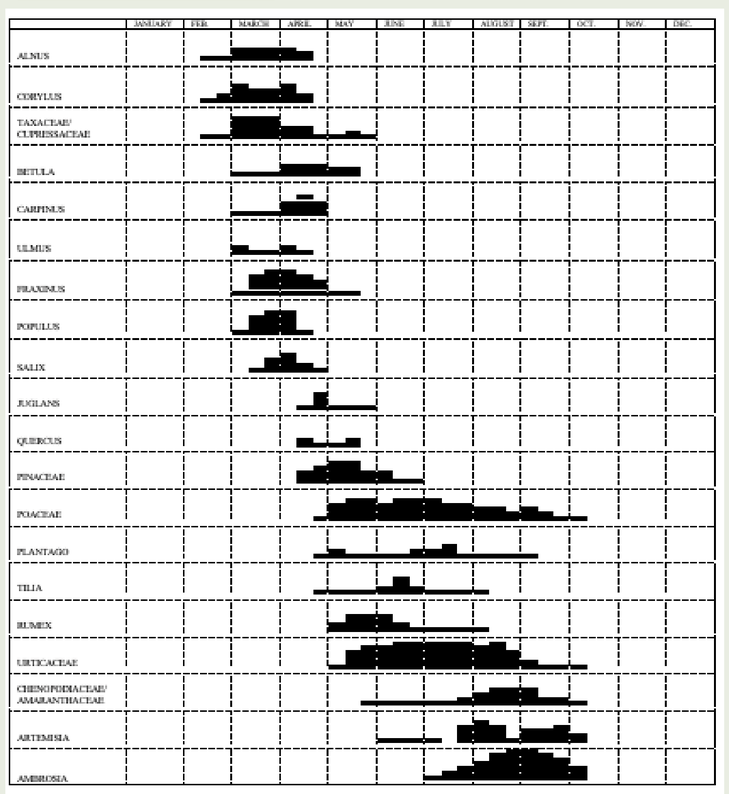


FIG. 1. Pollinic callendar for Timișoara

FIG. 2. Burkard volumetric trap

CONCLUSION

Today exposure to allergens is very common, both in the everyday environment and in the work environment. Population growth and climatic imbalance contribute to the establishment of measures to ensure the food requirement and the conditions necessary for a decent life. In this context, it is imperative to build a prevention system to reduce the risks regarding both occupational allergies and other allergies to increase the quality of life. The main starting point in building this system is represented by the knowledge and study of the incriminated allergens in order to be able to set correct management ways.

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