THE EFFECT OF ORNAMENTAL PLANTS POLLEN IN GUISSONA

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INTRODUCTION

Looking at the world around us, we can see that, even surrounded by concrete and constructions made by man, nature always come out to relieve their effects. Gardens, parks, flowerpots, windowsills, door ledges... there will always be places where to grow **trees, bushes and flowers**; the best allies to turn a sad and void space into a colorful one, full of life and scent. That said, ornamental plants have not only a bright side because: out of the visual effects, we can find negative aspects as well: the main one (that will work as basis for our study) is the impact in our body, the **allergenic effect** that some species used as ornamental plants can produce in the human organism.

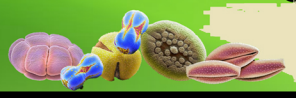
Do we really need to grow ornamental plants in public spaces of our cities, even when they may produce allergic reaction in our bodies?

PLACE OF STUDY

Guissona, La Segarra (Lleida), in Catalunya Central depression. It features dry Mediterranean climate, with Continental tendency: temperatures are extreme. Rain is common during spring and autumn, disappearing almost completely during the two month in summer.

WHAT IS POLLEN?

Pollen grains are formed in the stamens of the flowering plants and contain the male sex cells that reach the female part of the flower (pistil) to fertilize it in the process known as **pollination.** These flowers might have allergenic capacity if they spread through the air and get into our airways, setting free some proteins that can trigger an allergic reaction in sensitive individuals.



POLLEN USES

- **Without pollen, we would not have pollination nor plant fecundation,** so we would not have vegetation in the long term.
- **Food source for insects,** such as bees, that can turn it into honey or royal jelly and feed their larvae.
- **Commercial applications,** not only in food industry (due to its high nutritional level) but also in cosmetics or pharmacology.
- **Scientific use for palynology**, that means, the study of the structure of the pollen grains with the goal of obtaining information on the plant species and their history on Earth (colonization process, phylogenetic evidence, etc.).

HOW TO AVOID EXPOSURE TO POLLEN

1. **Get a deep knowledge** of the plant: effects on health and pollination season.
2. **Maintain windows closed** during the pollination hours (day and/or night time) and use filters for the air conditioner.
3. **Reduce open air activities** during high exposure hours and in windy days, during seasons with high pollen concentration.
4. **Close the car windows** when driving and use filters for the car air conditioner.
5. Avoid **mowing the lawn** and lie down on freshly cut grass.
6. Avoid hanging out the **laundry** in high pollen concentration days.
7. Wear **sunglasses** when going out
8. Follow **pollen counts** information (i.e. in Punt d'Informació Aerobiològica (PIA)).

POLLINATION

Insect pollination

INSECTS transfer pollen on their body and legs among flowers

- Bigger and more flamboyant flowers.
- Bigger and heavier pollen grains.
- Not so allergenic.

Anemophilous pollination

WIND is the one in charge of pollen grains transportation and dissemination.

- Main wind-borne pollen source.
- Smaller and lighter pollen grains.
- Allergenic pollen.

RESULTS AND COCNLUSSIONS

The presence of ornamental plants in green urban areas (Figure 1), together with the air pollution emitted over the last decades, increases the number of **environmental and health problems**, and thus, allergenic symptomatology.

Nowadays, **pollinosis is a serious and increasing health issue**: 40% of young teenagers suffer from allergic problems. Moreover, recent scientific studies show that the **lower the age** (early childhood and early school years), the bigger the risk of allergic sensitization in case of direct exposure to high levels of allergens.

POLLINOSIS LEVEL IN ORNAMENTAL SPECIES OF GUISSONA

	Very high	High	Average	Low	
trees	*Ailanthus altissima* *Betula pendula* *Cupressus sempervirens* *Platanus hispanica*		*Carpinus betulus* *Populus alba* *Populus nigra* *Quercus faginea* *Quercus ilex* *Robinia pseudoacacia* *Salix babylonica*	*Abies alba* *Acer negundo* *Celtis australis* *Cercis siliquastrum* *Laurus nobilis* *Magnolia grandiflora* *Picea abies*	*Pinus halepensis* *Tilia platyphyllos* *Viburnum tinus*
bushes	*Celosia argentea* *Juniperus* sp.		*Buxus sempervirens*	*Acanthus* sp. *Berberis thunbergii* *Cineraria marítima* *Cotoneaster horizontalis* *Escalonia* sp. *Euonymus japonicus* *Ficus benjamina*	*Hedera hélix* *Lavandula stoechas* *Nerium oleader* *Photinia fraseri* *Santolina* sp. *Teucrium fruticans*
flowers				*Chrysanthemum* sp. *Dianthus caryophyllus* *Gerbera* sp. *Leucanthemum vulgare* *Lilium longiflorum* *Narcissus pseunarcissus*	*Rosa* sp. *Spathiphyllum wallisii* *Tulipa* sp.

Figure 1. *Pollinosis level in ornamental species of Guissona.*

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