

## Breathing in the Park: A Project to estimate the allergenicity of urban green spaces in Spanish Cities

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Urban green spaces are areas of recreation of urban dwellers that must comply with the requirements of sustainability and health in the context of current city. However, the lack of planning in the design of these spaces, coupled with low biodiversity and massive use of a few species, lead to the implantation of trees involved in processes of adverse reactions for the population. This job presents an approach to the allergenic potential of different parks located in several Spanish cities, by applying a new allergenicity index, which considers the biological parameters of tree species growing in the space (strategy of pollination, duration of the period of flowering and allergenic potential), as well as other factors related to its activity as a source of emission of allergens. The resulting value of this index enable to classify each park based on its allergenicity: 0, value does not constitute any risk to population, up to 1 in those with abundant species of maximum allergenicity. In this study, a total of 20 parks located in different climatic zones of Spain and of very different types: urban, modern, historic park, boulevard and squares, have been analysed. The results obtained after the application of the index reveal that some of them recorded a value of index higher than 0.30, sufficient to cause allergic symptoms to the people suffering from pollen allergy any season of the year. The index also identifies those species more contributive to the allergen value of the park, emphasizing among them those from the Cupressaceae, Betulaceae and Moraceae families, and to a lesser extent, Oleaceae and Platanaceae. Other factors that have an impact on the value of resulting allergenicity is the presence in the parks of populations of anemophilous allergenic species and density of trees per hectare. The possibility of cross-reactions between species of the same family, and a greater number of male individuals in the case of dioecious species are also aspects to consider. It can be concluded that the index is an effective tool to estimate the allergenic potential of urban green areas, so that they corrective measures for situations that may pose a risk to people suffering from pollen allergy can be proposed.

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