

Comparative study of *Alternaria* airborne spore concentrations among urban, rural and natural areas in southern Spain.

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One of the most cosmopolitan fungal spore types present in the air is that belonging to *Alternaria*. This spore type has been proved to have a negative impact on sensible population, in general, and children with airway hyperresponsiveness, in particular. Furthermore, *Alternaria* species are phytopathogens that cause high economic losses in agriculture. Therefore, studies on the dispersion behaviour and distribution patterns of *Alternaria* spores will be very useful in order to reduce their negative impact on the population health and the agriculture. The aim of this study was to establish relationships between the airborne concentrations of *Alternaria* spores and the meteorological and climatic variables of the studied areas, as well as land use. For that, an aerobiological study has been carried out during 2018 in three sampling sites: a coastal urban city (Malaga, 58 m.a.s.l.), an inland rural city with high influence of crops and natural areas (Ronda, 751 m.a.s.l.), and a third site located inside a Natural Park (Sierra de las Nieves, 1070 m.a.s.l.).

The samplings were carried out by means of three Hirst-type volumetric pollen traps, and the samples obtained were mounted and counted following the methodology proposed by the Spanish Aerobiology Network (REA). Meteorological data were supplied by the National Agency of Meteorology (AEMET) in the case of Malaga and Ronda stations, and by ACAMET meteorological network in the case of Sierra de las Nieves. Statistical analysis was carried out by using R software and "AeRobiology" package.

Negative and significant ($\alpha=0.001$) Spearman correlations were found between daily values of *Alternaria* spore concentration and precipitation as well as relative humidity in all the sampling sites, while positive and significant correlations were found with temperatures (the highest with maximum temperature). *Alternaria* daily concentrations showed significant differences between Sierra de las Nieves and Malaga, but there were not significant differences between the other compared stations. This may be explained on the basis of a certain degree of similarity in land use in the case of Malaga and Ronda and to being situated in the same biogeographical area in the case of Ronda and Sierra de las Nieves. Despite the results obtained by other authors, regarding the climatic parameters, we did not find a direct relationship between the continentality index and the total amount of *Alternaria* spores detected during spring and summer in the different sampling stations. Similar results were obtained with average annual temperature and total annual rainfalls. Regarding land use, the highest concentrations were obtained in the rural locality of Ronda.

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