BROUSSONETIA PAPYRIFERA, THE MOST DOMINANT POLLEN ASSOCIATED WITH ALLERGIC RHINITIS AND ASTHMA ATTACK IN TROPICAL TAIWAN

Pei-Chih Wu, Chang Jung Christian University, Taiwan, R.O.C.
Chen Mo-Jen, National Cheng Kung University, Taiwan, R.O.C.
Wei-Ping Lin, National Cheng Kung University, Taiwan, R.O.C.
Huey-Jen Su, National Cheng Kung University, Taiwan, R.O.C.

Background and Aims: Pollen is one of the most common aeroallergens that contributing to the development and occurrence of seasonal allergic respiratory illness in European and North American countries. The sensitive pollens are different geographically because of the variants of climate, nature, and vegetation. Comparing to the abundant literatures of pollen allergy in many parts of the world, very few studies have been conducted in tropical regions. Because of lacking of pollen monitoring database in Taiwan, the prevalence of pollen allergy were usually misleading the information for using the pollen taxa usually in European and North American countries. Our study establish an aeroallergen monitoring station in southern Taiwan to collect and quantify the daily pollen concentration in atmosphere for studying the contribution of major pollen allergen in allergic respiratory illness in Taiwan.

Methods: A Burkard 7-day volumetric sampler was set up to collect atmospheric pollen at a flow rate of 10 l min-1 in Tainan City and operated routinely all year round. Counts and taxa of pollen during Jan. 2005 to Dec. 2006 were identified and daily concentrations in atmosphere were estimated. Daily clinic visits of various allergic diseases were collected from Medical Center where the station was located. The meteorological and air pollutants data were also obtained from Central Weather Bureau and Environmental Protection Administration. Generalized Additive Mixed Model (GAMM) was used to assess the multiple-lag effects of pollen concentrations and air pollution components on allergic diseases. The multiple-lag effects were examined from 0 to 4 days.

Results: *Broussonetia papyrifera*, paper-mulberry, is the most dominant pollen comprised around 30.38% and 39.51% of total pollen in 2005 and 2006. The temporal trend of *B. papyrifera* pollen level was consistent with total pollen with highest concentrations in Mar. and consistent to Nov. Elevated daily *B. papyrifera* pollen was significantly associated with increasing relative risks of allergic rhinitis visits (RR=1.023, 95% C.I.=1.003, 1.043) at lag 2 and 3 when adjusting daily average temperature and other air pollutants. Increasing relative risks of asthma visits was also shown at lag 3 when increase equal in magnitude to its mean (RR=1.023, 95% C.I.=1.009, 1.036). The effects of *B. papyrifera* also shown to be an independent role on increasing risk when adjusting different weather and air pollutants in the model. One study had shown that allergy of *B. papyrifera* might only triggered by fresh pollen materials and that might be the rationale of allergic sensitization to *B. papyrifera* may regard in many places of the world.

Conclusions: Our study is the first study showing pollen calendar and trying to establish the relationships between dominant pollen taxa and the occurrence of allergic diseases in tropical Taiwan. This preliminary analysis addresses the need of aeroallergen monitoring station and using the regional pollen taxa for diagnosis and prevalence investigation in our region.

References:

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