

Article Type: Correspondence

## **Epidemiology of asthma exacerbations and their relation with environmental factors in the Basque Country**

*To the Editor:* We read with interest the recent paper by Altzibar *et al.* concerning comprehensive epidemiological investigation of asthma exacerbation [1]. In their research, there was weak correlation between airborne PM concentrations and asthma exacerbation. In this regard, they introduced few studies showing divergent outcomes (i.e. negative and positive correlation) in the discussion. In general, however, variation in PM-associated toxicity including immunotoxicity has been attributed to differences in geographical location, seasonal influences, and components [2-4]. Accordingly, it is quite probable to observe different degree of impacts of PM against asthma status. Indeed, we have previously examined the additive/synergistic effects of pulmonary exposure to concentrated ambient particulate matter near a heavily trafficked road in Yokohama city (Japan) on a mouse lung inflammation model several times and achieved different results which depended on weather, season, and traffic density (unpublished communications). Researchers of environmental sciences are often interested in, for example, the elemental to organic carbon content, differential concentration of heavy metals, PAH levels etc. Some additional detail about PM analyses may be warranted.

### **Conflict of interest**

All authors declare that they have no conflicts of interests.

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## References

- 1 Altzibar JM, Tamayo-Uria I, De Castro V, *et al.* Epidemiology of asthma exacerbations and their relation with environmental factors in the Basque Country. *Clin Exp Allergy* 2015; **45**: 1099-108.
- 2 Olson DA, Turlington J, Duvall RM, *et al.* Indoor and outdoor concentrations of organic and inorganic molecular markers: Source apportionment of PM<sub>2.5</sub> using low-volume samples. *Atmos Environ* 2008; **42**: 1742-51.
- 3 Farina F, Sancini G, Mantecca P, *et al.* The acute toxic effects of particulate matter in mouse lung are related to size and season of collection. *Toxicol Lett* 2011; **202**: 209-17.
- 4 Happon MS, Hirvonen MR, Halinen AI, *et al.* Seasonal variation in chemical composition of size-segregated urban air particles and the inflammatory activity in the mouse lung. *Inhal Toxicol* 2010; **22**: 17-32.