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### Plant comet assay in biomonitoring of air pollution in Sarajevo, Bosnia and Herzegovina

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The World Health Organization recognizes air pollution as a significant health and environmental concern. Threatening air pollutants are a common predicament of developing countries. Located in a valley and surrounded by high mountains, Sarajevo, the capital of Bosnia and Herzegovina (B&H), suffers temperature inversions during autumn/winter which trap harmful particles thus exacerbating their effects. Local geomorphology, vehicle emissions, coal combustion from households, and the lack of adequate environmental policies profoundly influence the air quality. The detrimental effects of air pollution are well-known through various human biomonitoring studies. However, biomonitoring studies are inevitably hindered by human lifestyle and individual metabolic variance. Plants, on the other hand, are continuously exposed to a variety of environmental factors, thereby presenting compelling models for periodic air pollution biomonitoring. *Ligustrum vulgare* L. (wild privet) is a semi-evergreen hedge plant from Oleaceae family, widespread across Europe, East Asia and North America. It is tolerant towards a wide array of soils and environmental conditions. We applied plant comet assay in order to compare DNA damage in *L. vulgare* leaves sampled at two urban and one rural site, with respect to season, leaf position and the stage of development. Tail intensity (TI) values showed significant differences between urban and rural sites ( $P < 0.001$ ), but also between adult and young leaves. At urban sites, outer adult leaves revealed higher TI compared to inner adult, and both outer/inner young leaves. At rural sites, those parameters did not significantly differ. In regards to COVID-19 pandemic, TI at urban sites was lower after the lockdown compared to pre COVID-19 period. Given its ubiquitous distribution and genome size, our results demonstrate that *L. vulgare* is a reliable model for plant comet assay and air pollution biomonitoring. Nevertheless, ongoing monitoring and periodic sampling should provide more information concerning air data correlation, plant physiology and air pollution effects.

#### Keywords:

DNA damage; *Ligustrum vulgare*; plant comet assay; tail intensity; air pollution.