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Assessing the impact of different chemical pollutants on the gut microbiome of different pollinator species

S. Basiglio¹, F. Patriarca¹, R. Ali¹, E. Holzer¹, S. Casini², F. Sgolastra³, D. Lupi¹, F. Mapelli¹, E. Crotti¹

¹University of Milan - Department of Food, Environmental and Nutritional Sciences, Italy;

²University of Siena - Department of Physical, Earth and Environmental Sciences, Italy; ³University of Bologna - Department of Agricultural and Food Science, Italy.

Over the last decades, there has been a reduction in the diversity of bees and other pollinators, marked by declines or extinction of certain species. The exposure to chemical pollutants has been identified as a primary factor contributing to the reduction of pollinators. Exposure to anthropogenic chemicals may indirectly compromise animal health by disrupting the gut microbiota, which is essential for insect health. In fact, the gut microbiome of insects plays specific roles in various evolutionary, biological, and physiological processes, including nutrition and development. Most research examining the impact of agrochemicals on pollinators has concentrated on honeybees and bumblebees and on few selected molecules. Hence, little is known so far about the impact of various chemical pollutants on other insect pollinators, for which the structure and function of the microbiota are also poorly understood. Thus, this study, which is part of the POLYPOLL project (<https://site.unibo.it/polypoll/it>), aims to assess the effects of different categories of chemical pollutants on the gut microbiome of different pollinator species, i.e. *Apis mellifera*, *Osmia bicornis*, and *Eristalis tenax*. The study focuses on the taxonomic composition of the gut microbiome and the abundance of bacterial and fungal communities present in the gut. Initial data on the gut bacterial community of *O. bicornis* indicate that bacterial abundance is significantly reduced when specimens are exposed in laboratory trials to chemical pollutants, i.e. copper chloride and Boscalid, administered singularly and in combination. Further data must be collected to enhance understanding of the effects of various pollutant categories on the gut microbiome of pollinators.