

Abstract Information

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Address :	Higher Normal School, Mohammed V University in Rabat, Morocco
Participation :	symposium
Title of the Symposium :	Neurological disorders caused Meditteranean pollutants
Category :	Academic/Researcher
Thematic Area :	Pollutants, Neurotoxicity, and Brain Disorders
Title :	Insight on the neurotoxicity of glyphosate: Anxiogenic effect and underlying mechanisms
Co-Authors :	Nour-eddine Kaikai, Saadia Ba-M'hamed, Marco Sassoe-Pognetto, Maurizio Giustetto and Mohamed Bennis

Abstract :	Glyphosate, the active ingredient in many herbicides, has been shown to target the nervous system in various models. Our research revealed that glyphosate-based herbicides (GBH) increase anxiety, produced a reduction of 5-HT-immunoreactivity in the dorsal raphe nucleus, basolateral amygdala and ventral medial prefrontal cortex (mPFC) in treated mice. Furthermore, confocal microscopy investigations into the prelimbic/infralimbic regions of the mPFC and in basolateral/central nuclei of the amygdala disclosed that the behavioral alterations are paralleled by a robust increase in the density and labelling intensity of c-Fos- and pCREB-positive cells proving that GBH exposure caused neuronal hyperactivation in these regions. Additionally, GBH significantly altered the gut microbiome (GM) composition in terms of relative abundance and phylogenic diversity of the key microbes which coincided with the anxiety-like behaviors. Indeed, it decreased more specifically, Corynebacterium, Firmicutes, Bacteroidetes and Lactobacillus in treated mice. Taken together, these data highlight the essential link between GM dysbiosis and GBH toxicity and reinforce the link between GBH neurotoxicity and both gut-brain axis disruptions and anxiety.
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