

PESTICIDE RESIDUES IN SURFACE WATERS AND HEALTH ASSESSMENT IN AGRICULTURAL POPULATION IN THE MOUNTAIN REGION OF RIO DE JANEIRO STATE

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INTRODUCTION: Pesticides are chemical or biological substances used in agriculture to combat, repel or control pests and diseases. The indiscriminate use of pesticides in agriculture has affected biodiversity and human health. Scientific studies have shown a relationship between pesticide use and various diseases, such as cancer, endocrine disruption, neurological disorders and mental health problems. **OBJECTIVE:** This study aims to determine the presence and quantity of pesticides in surface waters (raw and drinking water) and correlate these findings with changes in intestinal microbiota and immunological function in exposed populations. **MATERIALS AND METHODS:** 39 samples of raw and drinking water were collected in 5 sample collections, in the districts of Vale de Bonsucesso, Vieira and Serra do Capim, all in Teresópolis city, areas with intensive pesticide use. The analytical method for identification and quantification of pesticides consisted of solid-phase extraction (SPE), followed by identification and quantification of 99 compounds by gas chromatography coupled to triple quadrupole mass spectrometry (GC-MS/MS). For glyphosate, identification and semi-quantification were performed using enzyme-linked immunosorbent assay (ELISA). **RESULTS:** 14% of the 99 pesticide residues analysed by GC-MS/MS were found with minimum and maximum value between 0,0032 – 2,0902 ug/L. Glyphosate was found in 85% of analysed samples with minimum and maximum value between 0,174 – 0,699 ug/L. Fungicides of triazole class and metolachlor, an herbicide banned in Brazil since 2019, were found in 25% and 21% of analysed samples, respectively. Evaluations of microbiota and immunological function in exposed populations are currently being processed. **CONCLUSION:** These preliminary findings demonstrate considerable frequencies of pesticides in surface waters, highlighting the need to assess the health conditions of exposed agricultural populations, with special attention to intestinal microbiota and immunological function. These, once associated with the aforementioned pesticide residues, may reveal modes of action related to the prevalence of chronic-degenerative outcomes and point to mitigating policies for exposure risks to specific population groups.

Key-words: Pesticide, Health Assessment, Humam Health, Mass Spectrometry.

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