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PRELIMINARY STUDY OF SOIL COMPOSITION FROM BALKAN ENDEMIC NEPHROPATHY AREAS, USING A GC-MS METHOD

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Abstract

Balkan endemic nephropathy (BEN) is a chronic kidney disease occurring predominantly in certain rural villages from Balkan Peninsula, including Romania. Peculiar environmental factors, such as drinking water, organic contaminants derived from coal, plant toxins, mycotoxins, heavy metals have been proposed to be causing the disease. Still, one of these etiological factors stands out: *Aristolochia clematitis* L., a plant that contains aristolochic acids (AAs) known as carcinogenic and nephrotoxic compounds. These phytotoxins are geochemically stable in BEN areas' soils and could enter the human food chain after being accumulated by crop plants. The aim of the present study was to examine the composition of soil and soil organic matter (SOM) samples from BEN endemic and nonendemic areas, using a simple and rapid microwave methanolic extraction method followed by gas-chromatography coupled with mass spectrometry (GC-MS) analysis. The results indicated similarities across all samples, both from endemic and nonendemic areas. A common compound (aristolone) was detected in samples where *Aristolochia* plants were present nearby the collecting area or collected simultaneously with the soils, therefore we can assume that this compound was transferred from plant parts into the soil.

Key words: aristolone, Balkan endemic nephropathy, gas chromatography-mass spectrometry, soil, soil organic matter

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