NAA application for multi-elemental analyses of Lonomia obliqua (Lepidoptera, Saturniidae) caterpillar

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This study aims to use the neutron activation technique (NAA) for the qualitative and quantitative research in the Lonomia obliqua (L. obliqua) caterpillar Walker, 1855 (Lepidoptera, Saturniidae). This species is poisonous and has the ability to cause serious and fatal hemorrhagic effects in humans after contact. The Butantan Institute (Research Center, São Paulo city) produces antilonomic serum (antidote), to reverse such effects, using the caterpillars of the species L. obliqua from various regions, mainly from Rio Grande do Sul (RS) where the prevalence of incidents is high. Considering that the efficacy and safety of antivenom immunotherapy are directly related to the reproducibility, we propose the elemental characterization of the L. oblique caterpillar (RS), complementing the biological and biochemical analyzes commonly performed. The biological material came from Butantan Institute (São Paulo city, Brazil). Several samples of caterpillars classified as healthy based on their morphological (size, color and developing the bristles) were lyophilized, macerated, weighed, and submitted to neutron irradiation. These measurements were performed in the IEA nuclear reactor at IPEN/CNEN-SP at least twice. A gamma spectrometer system with an ORTEC detector (GEM 60195), coupled to a MCA ORTEC Model 919E and connected to a PC, were used to measure the induced gamma-ray activity. These data can be used to standardize a specific antilonomic serum for caterpillars (L. obliqua species) coming from the south region (RS).