MERCURY AND GENOTOXICITY: A STUDY IN RIVERSIDE COMMUNITIES OF THE BRAZILIAN AMAZON

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INTRODUCTION: Genotoxicity studies changes in genetic material caused by agents that can induce mutations, cancer or malformations. The Micronucleus Test is used to monitor this exposure. Gold mining and biomass burning resulting from deforestation are sources of mercury emissions in the Amazon. In the aquatic environment, mercury can be converted into methylmercury, a highly toxic substance that bioaccumulates and biomagnifies in the food chain. Contaminated fish is the main route of exposure for riverside communities that depend on fish as a source of protein. **OBJECTIVE:** To evaluate genotoxic effects associated with mercury exposure in riverside populations of the Madeira River Basin, by analyzing nuclear alterations in epithelial cells of the oral mucosa. **MATERIALS AND METHODS:** This study was carried out in the riverside communities of Nazaré (RO) and Puruzinho (AM). A total of 103 oral cell samples were collected from 60 adults and 43 children. Total mercury (HgT) levels were correlated with genotoxic data. All analyses were performed using GraphPad Prism 8.0 software ($p \leq 0.05$). **RESULTS AND CONCLUSION:** There were no statistically significant differences in the number of micronuclei between sexes in the two communities (Puruzinho: $z = 0.345$ and $p = 0.696$, Nazaré: $z = 0.068$ and $p = 0.946$ for adults and $z = 0.264$ and $p = 0.792$ for children), either in adults or children. No micronuclei were identified in children in Puruzinho. The correlation between the frequency of micronuclei and HgT levels was not significant in Nazaré ($p = 0.823$) and Puruzinho ($p = 0.125$). Mean HgT value found in hair samples analyzed in the Puruzinho community: 2.8 ± 1.56 mg kg^{-1} for children and for adults 7.3 ± 3.54 mg kg^{-1}. While in the community of Nazaré the mean value for children was 3.89 ± 1.61 mg kg^{-1}, for adults 5.56 ± 2.95 mg kg^{-1}. The correlation between the frequency of micronuclei and the levels of total mercury (HgT)

in the samples was evaluated using the Spearman correlation test (p = 0.8217) for Nazaré (RO) and p = 0.1246 for Puruzinho (AM). Despite the levels of mercury in the hair, no statistically significant relationship with genotoxic damage was observed in the populations evaluated**.**

Keywords: Amazon; Hg; Riverside communities; Micronucleus.

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