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Are micronuclei a biomarker of stress-associated genotoxicity?

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Resumo

Introduction: An increasingly used method for the evaluation of genetic damage is the buccal micronucleus assay; this is minimally invasive and not time consuming, becoming currently used as a standard cytogenetic test [1]. A micronucleus is a tiny extra-nuclear body that originates from chromosomes that are left behind in the process of cell division. The formation of micronuclei is associated with genome instability and with several medical conditions in humans [2]. In a much lesser extent, micronuclei from oral cells are starting to be used as a biomarker of genomic damage induced by psychological stress [3]. The peripartum period of a pregnant female dog is a stress-inducing situation [4] and whether this could induce or not a genotoxic effect is still unknown. **Objectives:** This research aims to evaluate the frequency of micronuclei in oral exfoliated cells in female dogs in the peri and post gestation period. This evaluation aims to analyze the potential of oral mucosa micronuclei

as a stress-induced genotoxicity biomarker. **Material and Methods:** In this work we will study a population of 23 female dogs, from a shelter that practices selectively breeding dogs. The breeds of the female dogs to be studied are Pugs and French bulldogs. The age range will go from 1 to 4 years old. Saliva samples will be collected at two times, peri-partum and post-recovery. Cells will be prepared according to the protocol made by Thomas et al., 2009 [5]. **Results:** It is expected that the analysis of the results obtained from the buccal cells of the female dogs will provided indications of whether the pregnancy may induce or not some temporal genomic damage. **Conclusions:** If an increase in the number of micronuclei occurs after a period of stress, it would be (in our knowledge) the first time that a link between stress and genotoxicity is established under the circumstances of this study. The opposite result would indicate that this type of stress would not have a genotoxic effect.

Keywords: genomic damage; exfoliated buccal cells; pregnancy stress; saliva; animal welfare

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Prevention of juvenile delinquency

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Resumo

Introduction: Juvenile delinquency is usually a multicausal social phenomenon, in which sociocultural,

economic, family, and individual factors are interrelated, e.g., poverty; degrading housing; social exclusion; family