

Acerola (*Malpighia glabra* L.) is a plant popularly used for various purposes, rich in several bioactive compounds that can act as free radical scavengers. Among them are flavonoids, carotenoids and vitamin C. The aim of this study was evaluate the genotoxic and antigenotoxic activities of acerola fruit, that was performed by the *ex vivo* Comet Assay in blood cells of male *Mus musculus*. Acerola samples were from Rio Grande do Sul (RS), São Paulo (SP) and Ceará (CE), being used at three different concentrations: C<sub>1</sub> (2mg/ml), C<sub>1/2</sub> (1mg/ml) and C<sub>1/4</sub> (0.5mg/ml). Blood samples were exposed to three concentrations, during two hours in stove at 37°C; blood sample in C<sub>1/2</sub> concentration was exposed also during 4 hours (C<sub>1/2-4h</sub>). After intervention, extra slides of animals were exposed to H<sub>2</sub>O<sub>2</sub> to DNA damage induction. Moreover, samples were quantified in relation to vitamin C (HPLC). The data demonstrated that all concentrations of RS sample showed pro-oxidant effect. The exposure of blood samples to acerola from SP and CE increased the resistance of DNA after H<sub>2</sub>O<sub>2</sub> challenge. Sample of CE presented higher level of vitC (0.786 mg/g), while RS has lowest level (0.111 mg/g). 0.0270 mg/g of sample was the amount of vitC found at acerola-SP. Studies report that within the same specie there are different varieties of fruits with constitutions that can vary. The differences of the geographical origin of the fruit act in their constitution, considering the amount of solar radiation, soil quality and environmental features to which the plant is exposed. These factors may influence the amount of flavonoids, carotenoids and vitamin C on fruit, being this compound an antioxidant or pro-oxidant agent, depending on the dose that is found. There are relation between a probably protection effect and the amount of vitamin C, and our study is consistent with this data.