ATMOSPHERIC VARIABLES AND UV RADIATION IN SANTA MARIA, RS: EFFECTS ON THE DNA MOLECULE AND THE INCIDENCE OF SKIN CANCER IN THE POPULATION

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INTRODUCTION: Ultraviolet (UV) radiation is part of the electromagnetic spectrum emitted by the sun and is divided into UVA (315–400 nm), UVB (280–315 nm), and UVC (100–280 nm), which differ in wavelength and their interactions with biological molecules. This radiation can damage cellular DNA, leading to mutations that cause cell death, with effects such as skin aging, cataracts, erythema, or contributing to the development of skin cancer. Atmospheric factors, such as the ozone layer and cloud cover, influence the intensity of UV radiation that reaches the Earth's surface. **OBJECTIVE:** To evaluate the impact of cloud cover on UV radiation and its biological effects, especially DNA damage, and the incidence of skin cancer in Santa Maria, RS. **MATERIALS AND METHODS:** Cloudiness data were obtained from REDEMET, while UVA and UVB radiation were monitored using specific radiometers. DNA samples were exposed to environmental UV radiation under different sky conditions and analyzed for DNA lesion formation by gel electrophoresis. Simultaneously, data on skin cancer incidence are being collected from the University Hospital of Santa Maria (HUSM) to build the first epidemiological study of skin cancer in the region. **RESULTS AND CONCLUSION:** Preliminary results show that even on cloudy days, UV radiation can reach high levels, causing significant DNA damage. An increase in skin cancer cases has also been observed in the region in recent years. These findings highlight the importance of protective measures against solar exposure even under cloudy conditions and reinforce the need for public awareness policies to prevent diseases related to UV radiation, especially skin cancer.

Keywords: UV radiation; DNA lesions; Cloud cover; Skin cancer.