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RESEARCH REPORTS

Could ultraviolet B irradiance and vitamin D be associated with lower incidence rates of lung cancer?

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Background: This study examines whether insufficient ultraviolet B (UVB) irradiance, a marker of vitamin D inadequacy, might contribute to lung cancer incidence.

Methods: The association of latitude and UVB irradiance with age-adjusted incidence rates of lung cancer in 111 countries was investigated. Independent associations with UVB irradiance, cloud cover, anthropogenic aerosols, and cigarette smoking, were assessed using multiple regression.

Results: Latitude was positively related to incidence rates in men ($R^2 = 0.55$, $p < 0.01$) and women ($R^2 = 0.36$, $p < 0.01$). In men, cigarette consumption ($p < 0.001$) was positively related to risk, whereas UVB irradiance was inversely associated ($p = 0.003$). There were positive associations with UVB absorbers, in particular cloud cover ($p = 0.05$) and aerosol optical depth ($p = 0.005$). The R^2 for the model was 0.78 ($p < 0.001$). UVB irradiance was also inversely associated with incidence rates in women ($p = 0.0002$), whereas cigarette consumption ($p < 0.001$), total cloud cover ($p = 0.02$) and aerosol optical depth ($p = 0.005$) were positively associated. The R^2 for the model was 0.77 ($p < 0.001$).

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Conclusions: Lower levels of UVB irradiance were independently associated with higher incidence rates of lung cancer in 111 countries.

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