

People who live by the sea can get healthier by breathing?

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There are shreds of epidemiological data suggesting that living by the sea can have positive effects on human health, but the causal factors are still unknown. Sea Spray Aerosol (SSA) is one of the major atmospheric aerosol particle types, which residents of seaside cities are exposed to on a daily basis, may provide an explanation.

While most of the research on human exposure to SSA focused on the negative health effects during Harmful Algal Bloomings (HBA), there are some papers that suggest the bioactive substances in SSA can regulate the mTOR pathway which is related to several diseases including lung cancer, therefore have can have potentially positive effects on human health.

In this research, we collected SSA samples in different environmental conditions from Apr. 2019 to Apr. 2020, then exposed the extracts of SSA to both normal (BEAS-2B) and adenocarcinomic (A549) human lung epithelial cell lines, along with city aerosol and blank as control groups. The total RNA of each sample was sequenced, and mRNA expression profiles were analysed.

This is the first report indicating the differences of gene expression response to the SSA exposure, which may provide inspiration for research on the ocean and human health.

Keywords: Sea spray aerosol; Human health; Lung cancer; BEAS-2B; A549; Biogenics hypothesis