

The effect of inorganic particle concentration on bacteria-virus-nanoflagellate dynamics.

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The effect of inorganic particle concentrations on bacteria–virus–nanoflagellate dynamics in an oligotrophic coastal system was investigated using a model aluminosilicate, kaolinite, with a modal size of 2.1 μm . Virus-only, bacteria-only and bacteria–virus–nanoflagellate incubations were carried out at increasing kaolinite concentrations to elucidate the microbial response. The sorption of bacteria and viruses to kaolinite particles was negligible over a concentration range of 1–50 mg l^{-1} . In contrast, the abundance of heterotrophic nanoflagellates was negatively correlated with kaolinite concentrations following both 48 and 96 h incubations. Calculated nanoflagellate bacterial ingestion rates were reduced by 5–35% depending on kaolinite particle concentration. In the bacteria–virus–nanoflagellate incubations viral production increased by 56×10^3 to 104×10^3 VLPs $\text{ml}^{-1} \text{h}^{-1}$ as a function of kaolinite particle concentration. Our results demonstrate for the first time that the interaction of microbial populations with inorganic particles can shift the balance between protist and virally mediated mortality of marine heterotrophic prokaryotes.