

## **Role for nanomaterials of bacterial gene expression and infectious state of host organisms**

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Some nanomaterials in cosmetic products act as UV-filters for skin. It is known, however, that some types of nanomaterials can induce skin inflammation. The inflammation is thought to be due to the harmfulness of the nanomaterials themselves. On the contrary, we considered another hypothesis on the action of nanomaterials in the skin damages. That is, nanomaterials would alter gene expression of indigenous bacteria in skin and they would induce inflammation indirectly. We investigated influence of some nanomaterials on the action of membrane receptors of *Escherichia coli*, and found level of two receptors activities were reduced by treatment of two nanomaterials ZnO and TiO<sub>2</sub>. Lack of the receptors in *E. coli* altered bacterial virulence to model host *Drosophila*. These results suggested that some nanomaterials have roles for regulation of bacterial virulence through change the activity of the membrane receptors.