

The Morphological and Biochemical Alterations Induced by *Allium sativum* in Human Microbial Pathogens

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ABSTRACT The morphological and biochemical alterations induced by sub inhibitory concentrations of *Allium sativum* (7mgml⁻¹) on three gram negative bacteria viz. *Yersinia enterocolitica*, *Salmonella typhimurium* and *Salmonella typhi*, and a gram positive bacterium such as *Staphylococcus aureus* (1x10⁹cells ml⁻¹ of each culture) were studied. The size of the colony was reduced on solid media, less viscous capsular colonies appeared (*Y. enterocolitica*), the highly motile organisms have become sluggish/ non motile/ dead (*S. typhi*, *S. typhimurium* at 37°C and *Y. enterocolitica* at 29°C) as determined by hanging drop method. There were alterations in the fermentation reactions of various sugars such as, glucose, lactose and mannitol by these microbes, indicating that *A. sativum* has inactivated several enzymes involved in different fermentation pathways thereby blocking these path ways. The oxidase, β-hemolytic, Proteolytic, Dnase and lecithinase enzymes have been inactivated but not the amylase activity in *Y. enterocolitica* following treatment with *A. sativum*. There was alteration in methyl red reactions followed by treatment with *A. sativum* in these pathogens indicating the inactivation of enzymes involved in mixed acid fermentation reactions of these pathogens. The enzymes coagulase, Dnase and phospholipase-c were inactivated in *S. aureus*. These results clearly indicate that *A. sativum* is a potent antimicrobial agent which inactivated several enzymes at sub inhibitory concentration, eventually leading to the death of these pathogens.

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