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Oxidative stress mediated antibacterial activity of Kombucha against *Vibrio cholerae* N16961

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Kombucha is a traditional medicine which gained popularity due to its various claimed and a few established pharmacological effects. It is prepared by fermenting sugared black tea with a consortium of acetic acid bacteria and yeasts for 14 days at 28°C. In the present article we focussed on the inhibitory activity of Kombucha against a common enteropathogen *Vibrio cholerae* N16961 along with the investigation of its mode of action. Kombucha was found to generate oxidative stress in the bacterial cells resulting in the disruption of bacterial outer and inner membranes in both time- and dose-dependent manners. Since reactive oxygen species (ROS) usually targets cellular DNA, we further checked the effect of Kombucha on bacterial DNA *in vitro* by isolating purified pUC 19 followed by treatment with Kombucha at 37°C. It was observed that Kombucha was able to disintegrate bacterial DNA as was detected from the migration patterns of treated and untreated DNA samples by gel electrophoresis. A smear of bands was observed in the treated samples unlike the untreated sample. Thus it can be inferred that oxidative stress mediated damage of cell membranes as well as DNA have been found to be the major mechanisms of antibacterial activity of Kombucha. Hence our results suggest the fact that Kombucha can be used as an alternative source for treating enteric bacterial infections.

Biography

Debanjana Bhattacharya has completed her Bachelor of Science in Microbiology from University of Calcutta, India and Master of Science in Biotechnology from Jadavpur University, India. She is now doing her PhD in the Department of Life Science & Biotechnology at Jadavpur University, India.

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