

SOLAR RADIATION AS A MEANS OF WATER DISINFECTANT TO PREVENT TYPHOID FEVER

¹K. O. AKINYEMI, ¹A. O. MUSTAPHA, ¹A. O. ADEWALE
AND A. O. COKER²

¹ Department of Microbiology, Lagos State University, Ojo, P.M.B. 1087,
Apapa, Lagos, Nigeria.

² Department of Medical Microbiology and Parasitology, College of Medicine,
University of Lagos, Akoka, P.M.B. 12003, Lagos, Nigeria.

ABSTRACT

The effect of solar radiation as a means of water disinfectant was conducted in this study. Fresh cultures of clinical isolates of *Salmonella typhi* strains identified by the standard methods were used. Preparations of aqueous suspension of *S typhi* were done in transparent plastics, glass bottles and metal basins and were covered with either transparent and/or translucent polytene bags and were exposed to sunlight using standard procedures. The suspensions were analyzed aseptically at 0,3,6,24,27 and 30 hours of incubation. The solar intensity for each experimental day was obtained. Controls were maintained for each test batch. The results of the study showed that *S. typhi* strains in metal basins and glass bottles with transparent polytene cover died out completely during the first 3 hours (10.30-13.30 hours) of exposure of the suspension to sunshine. The average temperature range during the experimental period was between 32°C to 38.5°C. The period of most rapid decline in *S.typhi* cells in this study corresponded with the peak of solar intensity (2,046kj/m²) rather than temperature. Therefore, exposure of water contaminated with *S.typhi* to solar radiation in transparent containers for at least 3 hours on a bright sunny day will render the water innocuous and thus preventing typhoid fever.

Keywords: Disinfection, *Salmonella typhi*, Solar energy, Typhoid fever and Water.