

Nanotechnology Applications in Health: The Case Study of a Polymeric Nano-Drug Delivery System.

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Nanotechnology is regarded as the basis for the next industrial revolution as its applications permeate nearly all the facets of human life. One of the notable areas in which nanotechnology has the potential to transform human life for the better is in the area of drug encapsulation and delivery for Tuberculosis treatment. Tuberculosis is currently one of the leading causes of death among adults in Southern Africa and it is predicted that there will be 3.5 million new cases of tuberculosis over the next decade. Although there is effective therapeutic regimen for treating Tuberculosis, the main challenge is patient non-compliance resulting in treatment failure. The patients tend to get fed up by the cocktail of drugs which they take on daily basis for a period ranging from six to twelve months. There is also an emergence of multi-drug resistant strains of Tuberculosis, which brings a host of challenges. It is against this background that research is being conducted towards reformulating first-line anti-Tuberculosis drugs into nano-particulate oral dosage forms for controlled release over extended periods. This is being done in order to reduce total doses and the treatment period and to improve patient compliance. This study is a voyage on the development of the nano-enabled drugs by exploring the opportunities and challenges along the journey to the market. The study is based on ethnographic research on the work by Council for Scientific and Industrial Research (CSIR) Nanomedicine Research Platform in South Africa.

Key words: Nanotechnology, Tuberculosis, Health