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third leading causes
of cancer deaths in
the united states

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Colon cancer is the third leading causes of cancer deaths in the United States. Colon cancer is on rise in developing countries and is gaining importance. Although mortality and morbidity rates of colon cancer decreased in US over the past decade due to improved awareness and screening, there will be an estimated 93, 090 new cases of colon cancer in year 2015 and 5% of Americans would be diagnosed with colon cancer in life time. Genetics are main cause for colon cancer incidence.

But, environmental factors and diet have an important effect on the colon cancer incidence and development (Sunkara et al., 2015). In addition, Carcinogenesis is a multistage multistep process. Animal models that mimic human carcinogenesis are important to determine dose and to test the efficacy, safety of chemopreventive agents.

Chemical induction of colon cancer in rodents by azoxymethane was a widely studied model for testing efficacy of dietary chemopreventive agents (Reddy, 2004). Nanoparticles are of great interest due to their novel physicochemical, magnetic, and optoelectronic properties that are governed by their size, shape, and size distribution. It is permanently the nanoparticles' extremely small size and large surface area to volume ratio that leads to the significant differences in properties not seen in the same material at larger scales in their bulk form (Perez et al., 2005).

Moreover, biological synthesis has emerged as an alternative to traditional synthesis methods for producing nanoparticles. Biosynthesis involves using a green chemistry based approach that employs unicellular and multicellular biological entities such as actinomycetes, bacteria, fungus, plants, viruses,

and yeast and synthesizing nanoparticles viabiological entities acting as biological factories offers a clean, nontoxic andenvironment-friendly method of synthesizing nanoparticles with a wide range of sizes, shapes, compositions, and physicochemical properties (Mohanpuria et al., 2008). In recent years, the convergence ofnanometre size scale technologies and biological technologies has created thenew field of nano biotechnology where nano metre size scale particles produced viabiological entities like plant cells, viruses, bacteria and others. In thisstudy we will show these new dimensions of this filed by studying and characterizationthe synthesis and effects of biologically synthesized titanium dioxidenanoparticles (TDNPs) in combination with other promising drugs for thetreatment of cancers especially colon cancer.

Our results will provide anexperimental basis for production of titanium dioxide nanoparticlesbiologically, understanding and evaluation its anticancer activity either aloneor in combination with other new drugs.