NANOREVOLUTION IN AIDS

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Abstract:
Acquired Immuno Deficiency Syndrome remains one of the most serious threats to global health. According to 2010 data from the World Health Organisation, about 34 million people are living with HIV worldwide. Although antiretroviral therapy has dramatically improved the quality of life and increased the life expectancy of those infected with HIV, life-long immunosuppressive treatment is required even as a cure for HIV infection remains elusive. The frequency of dosing and drug toxicity as well as the development of drug resistance and viral persistence pose additional limitations. However, several new approaches are being used including nanotechnology. The capabilities inherent to nanotechnology hold much potential for impact in the field of HIV for its prevention, treatment and most importantly early diagnosis. The advantages include targeted drug delivery into infected cells and to the immune system cells thereby minimizing systemic exposure with its risk of harmful side-effects, reduction in the amount of drug and individual drug dosage variability needed to achieve a therapeutic concentration. It has a significant benefit by acting upon latent reservoirs. These properties also pave way for the development of effective vaccines. Some nanopharmaceuticals themselves may possess anti-HIV activity. Another remarkable application is its integrated use in diagnostic tests that is more sensitive, quick, simple than the existing methods, offering the promise of better & early diagnosis of the disease & its markers even in low viral load. Thus ‘nanorevolution’ lights the lamp in 4 ways : preventive vaccinations, early diagnosis, better treatment & monitoring the effectiveness of treatments.