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REVIEW ARTICLE

Nanotechnology in veterinary and allied sciences

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Abstract : Nanotechnology refers to the use of very tiny (nano-scale) materials in a range of novel ways. 'Nano' means tiny and nano-particles are tiny particles, more than 8000 times smaller than a human hair. The properties of nano-particles make them suitable for a range of environmental applications, both in terms of improving existing environmental problems or by anticipating and preventing future environmental problems. Some of the greatest potential uses or application of nanotechnology in the environment are as biosensors and in the sectors of treatment, agriculture, veterinary / medical sciences, fisheries, bioremediation and for green nanotech manufacturing and engineering. The present article has been constructed considering the tremendous potential and application of nanoscience and nanotechnology in the concerned fields.

Key words : Nanotechnology, Nano-particles, Veterinary science, Nanoscience

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Nanotechnology has a tremendous potential to revolutionize agriculture and livestock sector. It can provide new tools for molecular and cellular biology, biotechnology, veterinary physiology, animal genetics, reproduction etc. which will allow researchers to handle biological materials such as DNA, proteins or cells in minute quantities usually nano-liters or pico-liters. Nanotechnology tools like micro-fluidics, nano-materials, bio-analytical nano-sensors, etc. has the potential to solve many more puzzles related to animal health, production, reproduction and prevention and treatment of diseases. It is reasonable to presume that in the upcoming year's nanotechnology research will reform the science and technology of the animal health and will help to boost up the livestock production. Nanotechnology will have a profound impact, but not in the immediate future as it is in the early stages of its development and needs to equip scientists, engineers and biologists to work at the cellular and molecular levels for significant benefits in healthcare and animal medicine. But It is reasonable to presume that in the upcoming year's nanotechnology research will revolutionize animal health and help to boost up livestock production (Patil *et al.*, 2009).

Veterinary health care is a highly responsible and growing concern not only for pet owners, but also for our nation and government. With an ever increasing pet population throughout the globe, along with higher costs for medications and veterinary care, the need for new solutions is urgent. At this period of time the main objectives of veterinary medicine is to excel according to the accepted standards of scientific excellence in the creation of new knowledge and its translation into improved health for the other species with which we share our world, to create more effective veterinary services and products and to strengthen the veterinary education system.

Livestock and fisheries will be affected by the nanotechnology revolution (Ganguly *et al.*, 2010). Nanotechnology can be used in veterinary and medicine for disease detection and for development of new pharmaceuticals for humans. Veterinary applications of nanotechnology may become the proving ground for untried and more controversial techniques - from nano-capsule vaccines to sex selection in breeding.

Nanotechnology, dealing with functional structures and