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Immune modulation in goats by plant derived melatonin

Name: Somenath Ghosh

Affiliation: Assistant Professor at Rajendra College, Jai Prakash University

Country: India

Email ID: somenath9936439419@gmail.com

ABSTRACT

The basic structure of melatonin is evolutionarily conserved. Hence, it was speculated that melatonin may be present in different animals (from unicellular to multi-cellular) and even in plants. Melatonin in plants is generally regarded as phyto-melatonin. Like the role of melatonin in animals, phyto-melatonin can perform a number of functions like attenuation of apoptosis, prevention of free radical generation, protection against UV irradiation etc. But, unlike phyto-estrogen, the role of phyto-melatonin in animals is totally an unexplored area. Hence, aim of the present study was to note the role of phyto-melatonin in maintenance of general health and immunity of goats. To fulfil the aim, we supplemented the goats with phyto-melatonin rich diet i.e. corn (*Zea mays*) which is having 1.4 ng/gm of dry weight of tissue and they are also edible to goats. We noted significantly high level of body weight, haematological (AST, ALT level, total RBC count and %Hb), immunological (TLC, %LC, %SR of PBMCs), metabolic (plasma glucose, cholesterol, HDL, LDL, protein levels and HDL: LDL ratio), free radical (SOD, catalase, GPx levels), hormonal (estrogen, melatonin), cytokine (IL-6 and TNF- α) levels and significantly low level of MDA. However, plasma testosterone was unaffected upon phyto-melatonin treatment. Thus, for the first time role of phyto-melatonin as a protective molecule with improving effect on the health and immunity of Indian goat *Capra hircusis* being proposed, as the effect of phyto-melatonin supplementation can be brought back to normal and this dietary supplement might be utilizing the similar pathway as commercial melatonin. There are so many less expensive and readily available sources of phyto-melatonin that requires the proper knowledge of exploitation of these sources for extreme benefit for animals as well as for the human beings in near or far future.

BIOGRAPHY

Dr. Somenath Ghosh has worked in the field of hormone biology and congenital disorders of human physiology and involved in this area since 2009 both as doctoral and Post-Doctoral fellows. Presently he is involved in research where he is trying to investigate the possible amelioration of osteoporosis and other fragile Bone Diseases by biodegradable Poly-L-Lactic Acid-Melatonin (PLA-Mel-Nano-particles) in a CSIR funded project. He is serving P.G. Dept. of Zoology, Rajendra College, Chapra, India as an Assistant Professor since 2019. Apart from having numerous publications in journals of National and International repute, recently they were invited to contribute a "Book Chapter" in a Book entitled "Recent Advances in Food Processing and Technology" going to be published by Springer-Nature Publishing House, USA.



Presenter Name: Dr. Somenath Ghosh.

Mode of Presentation: Keynote/Invited Speaker.

Contact number: +91-9936439419

Notes/Comments: Requested for Key

Note/Plenary Speaker