

Development of collagen based biomaterials from ruminant gastric wall for tissue engineering

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India has the largest livestock population in the world comprising of 200 million cattle (16% of the world) and 105 million buffaloes (56% of the world). About 14.2 million of cattle (8% of cattle population) and 10.3 million of buffaloes (10% of buffalo population) are slaughtered in India each year. The gastric components (viz. rumen, reticulum, omasum and abomasum) are generally not used as edibles and they can be a good source of collagenous biomaterials. The abattoir by products can be effectively utilized as source of extracellular matrices (ECM) scaffolds after proper treatment and processing. In this present study, the protocols were standardized for decellularising the ruminant gastric wall. The rumen and reticulum of buffalo origin were procured from slaughter house. The collected organs were washed and cleaned with distilled water to remove all the debris and feed particles. The tissues were cut into small pieces of size 20x20 mm². The tissues were preserved at -20° Celsius in sterile 1X phosphate buffered saline containing a broad spectrum antibiotic. The preserved tissues were thawed to room temperature before it was subjected to protocol for de-epithelialisation. De-epithelialisation was done by using hypertonic solution. The tissues were subjected to hypertonic solution for different time intervals in an orbital shaker at 37° Celsius. After subjecting the tissues to hypertonic solution, the epithelium was removed manually. The de-epithelialised tissues were then subjected to different concentrations of an ionic biological detergent for varying periods of time in an orbital shaker at 37° Celsius for decellularising the tissues. The results in detail will be discussed at the time of presentation.

Biography

Dayamon D. Mathew did his graduation in Veterinary Sciences and Animal Husbandry from Kerala Agricultural University, Thrissur, Kerala and completed post-graduation (M.V.Sc.) in Veterinary Surgery and Radiology from Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, Karnataka, with ICAR-Junior Research Fellowship. Currently he is pursuing his doctoral degree in Veterinary Surgery from Indian Veterinary Research Institute, Uttar Pradesh, India with ICAR-Senior Research Fellowship. He had published 3 research papers in journals of repute and presented more than 20 papers in various conferences and workshops.

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Potential role of diclofenac sodium in inducing biochemical changes in the testes and liver of mice

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Adverse drug reactions are a major problem for both health care providers and the pharmaceutical industry. They are common and significant cause of morbidity and mortality. Diclofenac sodium is one of the most common non-steroidal compounds of phenyl acetic acid class, binds extensively to plasma albumin, having inhibitory effects on prostaglandin biosynthesis. The prostaglandins are the lipid soluble metabolites of arachidonic acid, a component of cell membrane, which are important in the regulation of vascular responses, apoptosis and inflammation. The present investigation is an attempt to find out changes in the activity of certain transaminases (GOT, GPT), Phosphatases (Acid and alkaline) and other parameters like total proteins, lipids and lipid per oxidation in mice, when exposed to different doses of Diclofenac sodium. There was significant increase in the activity of transaminases during the different stages of the experiment in both liver and testes due to toxic effects of the drug. There was increase in lipid per oxidation owing to the oxidative stress. Significant changes were observed in the other parameters studied during the different stages of the experiment.

Keywords: Diclofenac, prostaglandins, transaminases, oxidative stress.

Biography

Deepak Mohan, working as Assistant Professor in Zoology, Govt. PG College, Mandi, H.P., presently on study leave pursuing his Ph.D. degree from Department of Biosciences, H.P.U. Shimla, H.P. He did his M.Sc. from University of Jammu in 1992 and thereafter M.Phil. from the same university in 1994. In 1999 he was appointed as lecturer in Zoology in the department of higher education. Presently, he is working on drug toxicity for his Ph.D. programme and has published one paper so far. He has been awarded Senior Research Fellowship by CSIR in 1994.

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