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Assessing ocular inflammatory markers in rabbit cornea after treatment with known irritants chemicals

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The search for an alternate and reliable ocular irritation test system, to replace *in vivo* animal testing, has been futile since there is a lack of validation with the *in vivo* test system. This has led to propose a better understanding of the crucial cellular and molecular changes occurring *in vivo* testing. Here, rabbit cornea was treated continuously with 5 known ocular irritants, over a period of 7 days. Scoring of the response was carried out according to OECD 405. After the sub acute exposure, the animals were sacrificed and corneal histological analysis was carried out. Inflammatory biomarkers (cytokines IL-1α, IL-1β, IL-8 and TNF-α) were tested using ELISA. Apart from that, examination of blood parameters, spleenocyte proliferation and analysis of oxidative stress biomarkers in liver and brain were carried out. After treatment, there was inflammation and fluid discharge from the cornea and conjunctiva. In comparison to control, there was a significant increase in production of inflammatory cytokine. Biochemical and hematological parameters showed a slight increase. Significant reduction in proliferation of spleenocytes was found when treated with the irritant chemicals. There were also slight alterations in oxidative stress parameters of liver and brain as well. It can be concluded that the rabbit corneal cells treated with known ocular irritants showed an increased inflammatory response, which was confirmed by increased cytokine level. Further, there was a variation in blood parameters, oxidative stress in brain and liver and decreased spleenocyte proliferation.

Biography

Reshma S. Cherian is currently doing her Ph.D. in Toxicology from Sree Chitra Tirunal Institute for Medical Sciences and Technology (Govt. of India), Trivandrum, Kerala, India. She completed her Post graduation in Biotechnology from Cochin University of Science and Technology, India.

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