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Hyperglycemia changes expression of photoreceptors in the eye**Suneeta Yadav**

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Zebrafish (*Danio rerio*) is a good research model to study visual system in vertebrates. In the visual system of Zebrafish, retina is most important part for photoinduction as it has photoreceptor cells called cone cell having photoreceptor protein molecules called opsins, photo-sensitive proteins. A few reports on retinopathy are available on Zebrafish but reports on change of photoreceptors in response to hyperglycemia were rare. To investigate the effect of hyperglycemia on the expression of opsins in the eye of the Zebrafish, adults were divided into two groups: Experimental and control. The experimental group was induced for diabetic condition or hyperglycemia frequently or alternately immersing them in glucose solution and water. Another group i.e., control received normal water and not provided with glucose. At the termination of study i.e., after 30 days of first day treatment, animals of both the groups were sacrificed and blood (for glucose level and stress hormone level), brain (for study of neurons and neuropathy in different areas), kidney (for nephropathy) and eye (for retinopathy and to measure expression of photoreceptors-opsins) were removed. Blood glucose level was measured using glucometer in both the groups and it was observed that glucose level in experimental animals were higher as compare to control. For visual histopathology, eyes were fixed, paraffinized, sectioned, deparaffinized and stained. When histological sections were photographed, visual deteriorations were detected. For immunohistochemistry, deparaffinized sections were rinsed in phosphate buffer saline (PBS) and primary as well secondary antibodies were applied on section to measure immune-reactivity of opsin and its expression. It was observed after photography of immuno-stained sections that immune-reactivity of opsins in experimental or diabetic group was higher as compare to control. These findings suggest that diabetes affects visual system and causes retinopathy. Neuropathy, nephropathy, endocrine disorders and stress study still needs to be studied.

Biography

Suneeta Yadav has completed her PhD from Banaras Hindu University, India and has worked on interaction of photoperiod and temporal phase relation of circadian neural oscillations in the reproductive regulation of Japanese quail. Her area of research was photobiology, reproductive endocrinology and chronobiology. Presently, she is Assistant Professor of Central University of Jharkhand, India. She is also engaged in research on Zebrafish for the study of diabetic retinopathy, neuropathy, nephropathy and hormonal disorders. She has 5 publications in different reputed, peer-reviewed journals and 13 abstracts published in different conferences and symposia with 13 oral/poster/invited presentations accordingly.

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