Aquaporins Function as a Novel Therapeutic Strategy for a Variety of Cerebral Disorders

Zeinab Najmi¹, Sayed Mostafa Modarres Mousavi¹ ²*

¹Shefa Neuroscience Research Center, Khatam Alanbia Hospital, Tehran, Iran
²Department of Nanobiotechnology, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

Abstract

Introduction: Some cells have specialized channels in their plasma membranes that allow water to be transported through the lipid bilayer much more expeditiously than by simple diffusion, which is referred to as “aquaporins”. Aquaporins are a family of membrane proteins that function as water channels in various cell types and tissues where fluid transport is crucial, such as the gastrointestinal tract, lung, secretory glands, and brain. A family of transmembrane molecules known as aquaporins facilitates the movement of water across cellular compartments. Conclusion: The critical role of Aquaporin-4 (AQP4) in mediating water fluxes in response to neuronal activity and possibly in seizure-induced edema. Therefore, function or expression modulation of AQP4 in a variety of brain disorders including hydrocephalus, tumor, stroke, and epilepsy can be suggested as a new therapeutic strategy.

Keywords: Therapeutic Strategy, Aquaporins, Epilepsy, Water Channels.

*Corresponding Author: Sayed Mostafa Modarres Mousavi
E-mail: modarres.mousavi@gmail.com