Chapter 1

AQUAPORIN; LIFE MOLECULE CHANNELS

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INTRODUCTION

The state of water as liquid which is regarded as a universal solvent encloses no common characteristics. Since this liguid is a component of pretty much psyhological and biological reactions, it is an inevitable substance in any position in the organism. Animals' circulatory system and the plants' vascular system run the liquid manipulation in long-distance. The aquaporins promote and simplify this manipulation of water in cells as well as in cellular tissues [(1)].

Aquaporins (AQPs) are small, intrinsic membrane protein families that accelarate transfer of water and some ions through the plasma membranes of cells in react to osmotic pressure [(2,3)]. The existence of aquaporins verified almost in any organism covering mammals, plants, bacteries, invertabrates as well as the other microorganisms and other vertabrates [(4)]. The first comprehensive member of the AQP family is the integral membrane protein CHIP28, discovered in 2003 [(5)]. Up to the present, thirteen different aguaporins labelled. These labelled AQPs encoded by the genes AQP0 – AQP12 and they coordinate and also modify many different biological functions in the organs and organisms of mammals like in gastrointestinal tract, lungs, kidneys, eyes, skin and brain. Function disorder in AQPs causes multifarious

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eration [3]. It is uncertain whether the AQPs' water transport capability is important or whether there are yet undefined interactions between AQPs and oncogenes. Hence, in order to determine the specific functions of aquaporins and to discover the non-toxic and new therapeutics of cancer there should be more researches to study on AQP inhibitors that can target tumor infiltration, metastasis and angiogenesis can be used in combination with existing cancer therapeutics targeting proliferating tumor cells [3].

SO WHAT?

There are some considerable information gaps about the functions of aquaporins like cell migration facilitated with aquaporins, cell proliferation and neuro-stimulating phenomenon. The latest data indicate some inevitable researches on obesity, cancer as well as the function of immune cell.

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