

Aquaporin 1 expression in human normal temporomandibular disc

Giuseppe Musumeci, Candida Caltabiano, Carla Loreto

Dipartimento di Scienze Bio-Mediche, Università di Catania, Italia

The aquaporins (AQPs) are a family of hydrophobic membrane channel proteins that are expressed in many epithelial, endothelial and other tissues and that participate in many physiological and pathological processes. In particular aquaporin-1 (AQP1), a member of this family proteins, is expressed by the masseter and infrahyoid muscles, meckel's cartilage and submandibular gland. Literature data on the role and the localization of AQP1 in articular joints are very poor, and none providing data on the normal temporomandibular joint (TMJ) disc. Accordingly, the present paper prompted this immunohistochemical and western blotting investigation, on the presence and distribution of AQP1 in human TMJ discs without any degenerative changes, in order to elucidate further aspects of the TMJ homeostasis system and disc tribology.

Twelve TMJ discs, were obtained bilaterally from six cadavers and they were processed for immunohistochemical and Western Blot analysis.

The results showed an AQP1 immunoexpression in few fibroblasts-like cells and fibrochondrocytes of normal human TMJ discs demonstrating a constitutive expression of this protein. No difference between the disc regions was seen in normal specimens. Western blot analysis of disc samples confirm the physiological AQP1 expression.

In this view it appears reasonable a physiological expression of AQP1 by TMJ fibrocartilage cells and interpretable as a physiological mechanism of tissue homeostasis. Further future interesting studies could be conducted to elucidate the full AQPs profile in TMJ pathological disc investigating their change of the expression patterns during TMJ disc diseases.

Keywords: AQP1; TMJ disc; immunohistochemistry; Western Blot.