AVPR1A arginine vasopressin receptor 1A

The protein encoded by this gene acts as receptor for arginine vasopressin. This receptor belongs to the subfamily of G-protein coupled receptors which includes AVPR1B, V2R and OXT receptors. Its activity is mediated by G proteins which stimulate a phosphatidylinositol-calcium second messenger system. The receptor mediates cell contraction and proliferation, platelet aggregation, release of coagulation factor and glycogenolysis.

Regulate water transport and brain edema formation, perhaps in part by modulating cation fluxes.

After focal traumatic brain injury TBI, V1aR inhibitors diminish V1aR and aquaporin-4 (AQP4), reduce astrocytic swelling and brain edema.

While experimental data show vasopressin V(1A) receptors to regulate aquaporin (AQP)4 water channel dependent brain water movement, the specific role in vasogenic and cytotoxic edema formation remains unclear.

Early cytotoxic brain edema component following brain injury plus secondary insult or focal ischemia results from a vasopressin V(1A) receptor mediated response, and occurs most likely through AQP4 up-regulation. The V(1A) antagonist SR 49059 offers a new avenue in brain edema treatment and prompts further study into the role of vasopressin following brain injury [1)].

1)
Kleindienst A, Dunbar JG, Glisson R, Marmarou A. The role of vasopressin V1A receptors in cytotoxic brain edema formation following brain injury. Acta Neurochir (Wien). 2013 Jan;155(1):151-64. doi: 10.1007/s00701-012-1558-z. Epub 2012 Nov 28. PubMed PMID: 23188468.