**Backgrounds:**
The effect of specific protein kinase A inhibitor H89 on Aquaporin 5 levels, which has a role in the inflammation of asthma pathogenesis, was investigated in this study.

**Methods:**
32 Wistar-Albino adult male rats, ranging between 250 and 350 grams, were divided into 4 groups: 1. Control group; 2. Shame group; administration of 1 ml Ovalbumin (OVA) solution intraperitonal (IP) and 0.1 ml OVA dissolved in dimethyl sulfoxide intranasal; 3. Asthma group; IP + intranasal OVA administration; and 4. H89 group; (IP + intranasal OVA) +0.1 ml H89. The lungs of the rats were evaluated histopathologically and immunohistochemically at the end of the study.

**Results:**
The histopathological changes and AQ5 levels of the sham and asthma groups were not statistically different (p> 0.05). However, the parameters were found to be increased in the asthma group compared to the control group (p <0.001). The alveolar degeneration and vascular congestion were statistically decreased in the H89 group (p <0.05). The AQ5 levels were reduced in the H89 group, but the difference was not statistically significant.

**Conclusions:**
Aquaporin 5 levels and histopathological changes were increased in asthmatic patients and an improvement was detected with H89 treatment. H89 has an effect on the inflammation of asthma pathogenesis, so it can be thought to be used in asthma treatment. However, more studies are needed to find out the therapy duration and ideal doses of H89 treatment.

**Key words:**
Asthma, Aquaporin 5, H89, Protein Kinase A, Ovalbumin.