

ABSTRACT

Altered Expression of Aquaporin3 and Aquaporin4 in Mice Colon After Morphine Induced Acute Constipation and Bisacodyl Administration

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Morphine is opioid that prescribed to treat aches and pains. However, morphine often causes Opioid Induce Constipation (OIC) (Hooten et al., 2015). It causes constipation by increasing the expression of AQP3 in the intestine. The increase is occurred indirectly through serotonin so water on the luminal side will be more absorbed to the intestinal vascular side (Ikarashi et al., 2015). Bisacodyl is one of the common laxatives to treat constipation.

The purpose of this study was to analyze the effect of morphine on the expression of AQP3 and AQP4 in mice colon with several parameters and also analyzed the effects of bisacodyl to treat OIC. This study used 36 mice which were divided into three groups, normal saline, morphine, and morphine + bisacodyl group. Then each group was further divided into two sub-groups based on the time of sacrifice, namely the 1st hour and 5th hour after morphine induction. The expression of AQP3 and AQP4 are observed using the Polymerase Chain Reaction (PCR) method.

The results showed constipation causes an increase on the expression of AQP3 followed by a decrease in the percentage of fecal water content, the number of feces, and the weight of the stool. While administration of bisacodyl give decrease on the expression of AQP3 followed by an increase in the number of feces and percentage of fecal water content. The evidence indicated that bisacodyl can relieve OIC based on those parameters. However, there were no changes in all the AQP4 expressions.

Keywords: Aquaporin, Morphine, Bisacodyl, Acute Constipation, PCR.