KPV

Molecular Formula: Lysine-Proline-Valine
Molecular Weight: 342. 43 g/moil | Sequence: C16H30N4O4

DESCRIPTION:

α-MSH is a neurohormone with extensive immunomodulatory effects on certain cell types. It exhibits potent anti-inflammatory effects by binding to melanocortin receptors in the skin. It is reported that the anti-inflammatory activity of α-MSH is mediated by the three terminal amino acids, Lysine-Proline-Valine (KPV).

KPV lacks the entire sequence motif required for binding to the MC-Rs, but still retains almost all the anti-inflammatory capacity of the parent hormone. This is also because peptides (like KPV) often act as hormones and relay information from one tissue through the blood to another via biologic messengers . The inflammatory activity of KPV is suggested to be mediated via inhibition of interleukin (IL)-1β.

Unlike α-MSH, KPV is free from the melanotropic effects and thus does not cause any pigmentation. Additionally, it is smaller in size and more chemically stable than α-MSH. These attributes make KPV a suitable candidate for the treatment of inflammatory skin disorders. KPV has a molecular weight of 383.49 Da and an Isoelectric point (pI) of 14 and hydrophilic in nature.

KPV is more stable and exerts less side effects, as it shares its sequence with human proteins. KPV might therefore be an interesting, easy to produce, and inexpensive therapeutic option in the treatment of inflammatory bowel disease that has to be elucidated in future clinical trials.

PROTOCOL:

Content & Potency: 500mcg capsule provided in a quantity of 30 capsules
Suggested dosage: Take one capsule once daily with or without food

CLINICAL RESEARCH:

Melanocortin-derived tripeptide KPV has anti-inflammatory potential in murine models of inflammatory bowel disease

Background: Despite some progress in recent years, the options for treating inflammatory bowel disease (IBD) are still dissatisfying, and surgery rates are still high. The anti-inflammatory effects of melanocortin peptides such as alpha-melanocyte-stimulating hormone (alpha-MSH) have been described recently in, for example, dextran sodium sulfate (DSS) colitis in mice. The aim of this study was to investigate the therapeutic potential of the melanocortin-derived tripeptide alpha-MSH(11-13) (KPV) and its mode of action in 2 models of intestinal inflammation.
Methods: The anti-inflammatory activity of KPV was analyzed in 2 well-described models of IBD: DSS colitis, and CD45RB(hi) transfer colitis. Furthermore, animals expressing a nonfunctional melanocortin-1 receptor (MC1Re/e) received DSS for induction of colitis and were treated with KPV. The course of inflammation was monitored by weight loss and histological changes in the colon as well as by myeloperoxidase (MPO) activity.

Results: In the DSS-colitis model, treatment with KPV led to earlier recovery and significantly stronger regain of body weight. Histologically, inflammatory infiltrates were significantly reduced in KPV-treated mice, which was confirmed by the significant reduction of MPO activity in colonic tissue after KPV treatment. Supporting these findings, KPV treatment of transfer colitis led to recovery, regain of body weight, and reduced inflammatory changes histologically. In MC1Re/e mice, KPV treatment rescued all animals in the treatment group from death during DSS colitis.
Conclusions: The melanocortin-derived tripeptide KPV showed significant anti-inflammatory effects in 2 murine models of colitis. These effects seem to be at least partially independent of MC1R signaling. In conclusion, our data suggest KPV as an interesting therapeutic option for the treatment of IBD.

Citation: Kannengiesser K, Maaser C, Heidemann J, Luegering A, Ross M, Brzoska T, Bohm M, Luger TA, Domschke W, Kucharzik T. Melanocortin-derived tripeptide KPV has anti-inflammatory potential in murine models of inflammatory bowel disease. Inflamm Bowel Dis. 2008 Mar;14(3): 324-31. doi: 10.1002/ibd.20334. PMID: 18092346.