Mutant Inhibin A

Catalogue number: 153689
Sub-type: Recombinant Peptide
Images:

Contributor

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Institute: Hudson Institute of Medical Research
Images:

Tool details

***FOR RESEARCH USE ONLY**

Name: Mutant Inhibin A

Alternate name: Follicle-stimulating hormone, FSH, activin, Transforming growth factor beta, TGF-?, Down's Syndrome,

Class:
Conjugate:
Description: Inhibin is a member of the TGF- ? subunit superfamily, formed from heterodimeric complexes composed of a-subunit and ?-subunits, in comparison to the majority of the other family members, which are homodimers. Inhibin acts as an antagonist inhibiting signalling of activin-related proteins (functioning in an endocrine rather than autocrine/paracrine manner). It regulates follicle-stimulating hormone (FSH) secretion from the anterior pituitary by blocking actions of activins. Inhibins are a non-steroidal gonadal hormone, best characterised for their role in regulating reproductive function. Recent research suggests that inhibins have pleiotropic actions, and are expressed in many organ systems throughout the body. Of particular interest, inhibin has been shown to stimulate bone growth, leading to suggestions of its potential as a therapeutic for osteoporosis. Inhibin A and Inhibin B are heterodimers, made up of an a-subunit linked to a ?-subunit. Two ?-subunits linked together forms activin, a protein with often opposing actions to inhibin. Overexpression of inhibin also results in expression of activin, and separating the two proteins is extremely challenging. The inability to produce stable and purified active recombinant inhibin has hindered studies into its potential use as a therapeutic agent or diagnostic tool. The present invention relates to the recombinant production of inhibin. At least one proprotein convertase cleavage site of the precursor subunits of inhibin is modified through substitution with the more efficiently processed cleavage site ISSRKKRSVSS. Further modifications include mutation of the type I receptor (ALK4) binding epitope of the beta subunit to supress activin bioactivity, and mutation of the homodimerization interface site of the beta subunit to reduce or prevent activin formation. Also disclosed are pharmaceuticals and uses of the inhibin precursor and mature inhibin. Inhibin stimulates bone mass and strength and is known to be decreased

in post-menopausal women suffering osteoporosis. Its full potential is yet to be realized, as production of this protein at scale is extremely challenging.
Purpose:
Parental cell:
Organism:
Tissue:
Model:
Gender:
Isotype:
Reactivity:
Selectivity:
Host:
Immunogen:
Immunogen UNIPROT ID:
Sequence:
Growth properties:
Production details:
Formulation:
Recommended controls:
Bacterial resistance:
Selectable markers:
Additional notes: Advantages: Current methods of recombinant inhibin production are inefficient with low yield, and multiple steps of purification are required to isolate recombinant inhibin using currently available systems. Our research have overcome these hurdles using their system for the production of engineered purified, potent, active inhibin analogs. **Possible Applications:** Inhibin is currently used in diagnostic tests for Down's syndrome and some ovarian cancers. It has potential as a diagnostic marker for infertility and pregnancy-related conditions. Inhibin has also been implicated in erythropoiesis, eye development, adrenal gland growth and function, and regulation in the immune system. The potential clinical utility of inhibin has yet to be explored to its utmost potential. The research use of inhibin can also be expanded, allowing for a more detailed understanding of this hormone. Circulating inhibin levels dramatically decrease during menopause. This loss of inhibin at menopause may contribute to decreased bone mass in osteoporosis, and inhibin A has been shown to restore bone growth in in vivo models of bone degeneration. Many current treatment strategies for osteoporosis aim only to slow disease progression, and adverse side effects mean patient compliance with current therapeutics is low. There is a need for the development of novel treatments which can increase bone mass and strength in osteoporosis patients. Osteoporosis Bone health Menopause IVF studies

Target details

Target:

Target alternate names:

Target background:

Molecular weight:

Ic50:

Applications

Application:
Application notes: Advantages: Current methods of recombinant inhibin production are inefficient with low yield, and multiple steps of purification are required to isolate recombinant inhibin using currently available systems. Our research have overcome these hurdles using their system for the production of engineered purified, potent, active inhibin analogs. **Possible Applications:** Inhibin is currently used in diagnostic tests for Down's syndrome and some ovarian cancers. It has potential as a diagnostic marker for infertility and pregnancy-related conditions. Inhibin has also been implicated in erythropoiesis, eye development, adrenal gland growth and function, and regulation in the immune system. The potential clinical utility of inhibin has yet to be explored to its utmost potential. The research use of inhibin can also be expanded, allowing for a more detailed understanding of this hormone. Circulating inhibin levels dramatically decrease during menopause. This loss of inhibin at menopause may contribute to decreased bone mass in osteoporosis, and inhibin A has been shown to restore bone growth in in vivo models of bone degeneration. Many current treatment strategies for osteoporosis aim only to slow disease progression, and adverse side effects mean patient compliance with current therapeutics is low. There is a need for the development of novel treatments which can increase bone mass and strength in osteoporosis patients. Osteoporosis Bone health Menopause IVF studies

Handling

Format:
Concentration:
Passage number:
Growth medium:
Temperature:
Atmosphere:
Volume:
Storage medium:
Storage buffer:
Storage conditions:
Shipping conditions: Dry Ice

Related tools

Related tools:

References

References: