

## // TREATMENT OF ZIP9-ASSOCIATED DISEASES WITH TETRAPEPTIDES

Ref-Nr: TA-TM 1095- Krankheiten

### HINTERGRUND

Osteoporosis, myodegenerative diseases and male infertility are generally treated - depending on the cause of the illness - e.g. by administering testosterone or testosterone derivatives. This type of treatment also involves the classic nuclear androgen receptor (AR), resulting in a variety of unwanted side effects caused by the hormonal activity (e.g. hirsutism, virilisation, high blood pressure, reduction in sperm count and much more).

### PROBLEMSTELLUNG

These as well as other diseases are based on malfunctions of somatic cells which (also) possess the ZIP9 receptor (osteoblasts, myoblasts, Sertoli cells, etc.), a membrane-bound testosterone receptor of physiological and pathophysiological significance. Agents binding to this receptor can therefore be expected, unlike testosterone or testosterone derivatives, not to cause any of the AR-mediated side effects mentioned above.

### LÖSUNG

In search for active substances corresponding to ZIP-9 at the Justus-Liebig-Universität, tetrapeptides were identified by means of molecular theory-calculations that bind to the ZIP9 receptor, and their effects upon cells bearing this receptor were investigated experimentally. During these investigations, therapeutic effects were found.



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### ENTWICKLUNGSSTAND

Prototyp

### PATENTSITUATION

EP anhängig

### CATEGORIES

//Medizin und Pharma //Therapie  
und Wirkstoffe



Osteoporosis, osteopathy, muscle atrophy, myopathy, amyotrophy, infertility

## VORTEILE

Since the designed tetrapeptides only bind to the ZIP9-receptor, and not to the androgen-receptor (AR), they do not exhibit the unwanted androgenic side effects associated with the application of testosterone.

Moreover, they are also easier to produce and more stable in storage than, for example, peptide hormones such as parathormone, another active ingredient used in the treatment of osteoporosis.

## ANWENDUNGSBEREICHE

Fields of application of the tetrapeptides, e.g. tetrapeptide "isoleucine-alanine-proline-glycine", are the treatment of various diseases in which ZIP9-expressing

cells are involved, e.g. osteoporosis and muscle atrophy as well as other diseases.

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