

DULOXETINE FOR THE EFFECTIVE TREATMENT OF DEGENERATIVE RETINAL DISEASES

 TECNOLOGÍA PATENTADA

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RESUMEN

Researchers at the University of Alicante, in collaboration with the Teófilo Hernando Foundation, have described, in a mouse model that replicates retinitis pigmentosa, a new use for the drug duloxetine in the treatment and prevention of degenerative retinal diseases.

Conditions such as retinitis pigmentosa, central areolar choroidal dystrophy, glaucoma, diabetic retinopathy, macular degeneration and retinopathy associated with both Alzheimer's disease and Parkinson's disease could potentially benefit from this treatment.

Pharmaceutical companies interested in supporting the development of further studies, as well as its commercial exploitation, are sought.

VENTAJAS Y ASPECTOS INNOVADORES

ADVANTAGES OF THE TECHNOLOGY

The use of duloxetine as a neuroprotective agent for the retina offers the following advantages:

- **Effective** results obtained in the murine model (rd10) in the treatment and prevention of neurodegenerative diseases of the retina.
- Improved **functional response** of the retina.
- Reduces **loss of retinal thickness**.
- **Prevents inflammation** of retinal cells.

INNOVATIVE ASPECTS

Duloxetine is a chemical compound that acts as an antidepressant by inhibiting the reuptake of serotonin and noradrenaline.

Duloxetine works by increasing the levels of serotonin and noradrenaline to maintain mental balance and block the transmission of pain signals in the brain. Duloxetine is currently used to treat depression, generalised anxiety disorder, pain associated with diabetic neuropathy, fibromyalgia, and also to treat chronic bone or muscle pain (such as lower back pain or osteoarthritis). It is also sometimes used to treat stress urinary incontinence in women.

Among the uses proposed to date for duloxetine, there is no indication whatsoever of its potential in the treatment and/or prevention of neurodegenerative diseases in general, nor, specifically, of degenerative eye diseases. In fact, its use was even discouraged in certain types of glaucoma.

Therefore, the present invention describes the **innovative use of duloxetine as an effective medicine for the treatment and/or prevention of the following degenerative retinal diseases**: retinitis pigmentosa, central areolar choroidal dystrophy, glaucoma, diabetic retinopathy, macular degeneration, retinopathy associated with Alzheimer's disease and retinopathy associated with Parkinson's disease.

APLICACIONES DE LA OFERTA

In *in vivo* tests carried out using the retinitis pigmentosa model (rd10 mouse), duloxetine preserved visual responses compared with the control group when administered at a dose of 10 mg/kg, once daily, by intraperitoneal injection, from postnatal (P) day 18 to P25. Specifically, it preserved the amplitude of the scotopic b-wave of the ERG and retinal thickness. It also reduced the population of cells expressing pro-inflammatory markers.

Although the drug has only been tested experimentally in mice (the rd10 model), it has the potential to be applied both to humans of any age and to animals (cows, horses, pigs, sheep, goats, dogs, cats, rodents, etc.).

COLABORACIÓN BUSCADA

We are seeking companies interested in acquiring this technology for commercial exploitation through **patent licensing agreements**. Interested companies must have the financial resources and suitable facilities to design full-scale pilot trials and to carry out the phases required by the project.

Profile and type of company sought:

Pharmaceutical companies specialising in the prevention and/or treatment of degenerative retinal diseases, including:

- Pigmentary retinopathy.
 - Central areolar choroidal dystrophy.
 - Glaucoma.
 - Diabetic retinopathy.
 - Macular degeneration.
 - Retinopathy associated with Alzheimer's disease.
 - Retinopathy associated with Parkinson's disease.
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