RP

2.3s Next Generation Therapeutics

CEVR Centre for Eye and Vision Research 眼視覺研究中心

The Hong Kong Polytechnic University 香港理工大學 | University of Waterloo

Developing Next-Generation Therapeutic Agents for Glaucoma

Principal Investigators

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InnoHK collaboration: Centre for Chinese Herbal Medicine Drug Development

Enhanced treatment of glaucoma

Aims

To bring next-generation therapeutics for glaucoma to human clinical trials the results of which will enable commercialization by pharmaceutical and food supplement companies.

Background

Glaucoma is the leading cause of irreversible blindness worldwide. It is incurable and typically characterized by raised intraocular pressure (IOP) ultimately leading to total blindness. Lowering IOP is the only clinical intervention documented to be effective in delaying the progression of glaucoma. However, existing anti-glaucoma treatments have substantial contraindications, undesirable side effects, and drug resistance.

Work to be Done

The research team is advancing glaucoma treatment through three innovative approaches:

- **Baicalein-Based Therapy –** The flavonoid baicalein has demonstrated IOP-lowering and neuroprotective properties in in vivo and in vitro models, offering dual therapeutic benefits absent in current treatments.
- **Dietary Supplement Development** – The project integrates Nephrokin, a patented plant extract into Bao Ming Drink, a best-selling Amway product known for supporting eye health.
- **TCM-Based Prescription (TP) –** Oral administration of TP has improved retinal and visual functions in animal glaucoma models. In collaboration with the **Centre for Chinese Herbal Medicine Drug Development**, the team is optimizing its composition, dosage, and delivery for glaucoma treatment.

Benefits

This new glaucoma treatment will provide immediate relief for diagnosed patients while equipping eye care professionals with more effective intraocular pressure control options. Individuals at high risk will gain prophylactic benefits, and the biotech industry will experience growth through emerging market opportunities. Long term, the treatment is expected to reduce global glaucoma-related complications, lower healthcare costs, and improve vision outcomes for millions, benefiting public health systems and society at large.

Impact

The project introduces a new class of anti-glaucoma drugs that combine IOP reduction with neuroprotective and anti-inflammatory properties, addressing a critical gap in current therapies. Flavonoid-based treatments and advanced drug delivery systems significantly enhance effectiveness. Additionally, the study explores natural compounds, dietary supplements, and TCM formulations, offering alternative retinal protection solutions where none currently exist, creating new therapeutic classes that go beyond conventional interventions to transform ophthalmic care.

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