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Bridging Knowledge and the Economy

Microparticles for Treating Macular Degeneration, Retinopathy of Prematurity and Cancer.

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Background

Microparticles (MPs) are small membrane vesicles released upon activation or during apoptosis from various cell types including lymphocytes, platelets, and endothelial cells. MPs have been implicated in the pathogenesis of cardiovascular and inflammatory diseases that are associated with vascular damage and impaired angiogenesis.

Recently, shed-membrane microparticles of lymphocyte T (LMPs) showed, at concentrations that can be reached in circulating blood under immunological dysfunction, biological activities. This opens opportunities for their use in angiogenic-related diseases such as oncology, wet AMD, and retinopathy of the prematurity (ROP).

Technology

Dr. Hardy and his team from the CHU Sainte-Justine discovered that shed-membrane microparticles of lymphocyte T (LMP) have strong antiangiogenic properties and direct antineoplastic effect on several cancer cell lines. These major findings support that LMP could be used for treating cancer and angiogenic diseases such as retinopathy of prematurity and age-related macular degeneration.

Results

In Vitro - Anti-Angiogenic Properties

- Inhibition of endothelial cell proliferation and migration. Inhibition of inflammatory corneal neovascularisation and aortic ring neovessel formation.

In Vivo - Anti-Retinopathy of Prematurity Activities

- Blockade of neovascularisation was observed in a murine model of oxygen-induced retinopathy.

In Vitro & In Vivo - Direct Anticancer Effect

- LMPs inhibit the growth of several tumor cell lines in vitro such as Hela, Lewis lung cancer cell, Neuroblastoma cell (N2A).

- LMPs reduce tumor size in a mouse model implanted with Lewis lung carcinoma primary tumors.

Competitive advantages

- Dual action on cancer and endothelial cells.
- Specificity towards proliferating cells such as tumor cells and endothelial cells.
- Ease to produce and low production cost.

Applications

- Cancer, angiogenic diseases including wet macular degeneration and ROP.

Patent Status

US provisional patent application

Business Opportunity

License

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