Aims, Objective and Lacunae

Aims and Objective

Part I

- To study protective effects of hesperetin on retinal vasculopathy via its anti-angiogenic mechanisms in streptozotocin-induced type-1 diabetic rats. (Study-I)
- To study protective effects of hesperetin on retinal neuroinflammation, apoptosis and oxidative stress in streptozotocin-induced type-1 diabetic rats. (Study-II)
- To study effects of hesperetin on gene expression of tight junction proteins and protein expression of extracellular matrix in diabetic rat retina. (Study-III)

Part II

- To study protective effects of quercetin on breakdown of blood retinal barrier via its anti-angiogenic mechanisms in streptozotocin-induced type-1 diabetic rats. (Study-I)
- To study retinal neuroprotective effects of quercetin in streptozotocin-induced type-1 diabetic rats. (Study-II)
- To study effects of quercetin on gene expression of tight junction proteins and protein expression of extracellular matrix in diabetic rat retina. (Study-III)

Part III

- To study role of herbal drugs (Moringa oleifera, Fenugreek and Triphala) in the prevention of diabetic retinopathy in streptozotocin-induced type-1 diabetic rats.
- To evaluate polyherbal combination for the prevention of diabetic retinopathy in streptozotocin-induced type-1 diabetic rats.

Lacunae

At present, intravitreal anti-inflammatory (corticosteroids) and anti-angiogenesis (anti-Vascular Endothelial Growth Factor) agents are being used as wide options for the pharmacotherapy of DR and diabetic macular edema (DME). Anti-inflammatory
agents (Triamcinolone acetonide and other agents) have shown some evidence-based clinical benefits in various randomized clinical trials for the treatment of DR and DME, and also shown improvement in best corrected visual acuity. However, direct intravitreal injections of corticosteroids are associated with serious side-effects like cataract and elevation of Intra Ocular Pressure. The most popular target of these agents is the subfamily of proteins known as VEGF, whose over-expression is believed to play a role in numerous diseases including DR and Age-related Macular Degeneration. Intravitreal bevacizumab (Avastin®) and Ranibizumab (Lucentis®) are gaining popularity just as a clinical adjunct to panretinal photocoagulation in patients with proliferative DR. Therefore, in present scenario pharmacotherapy has been used as an adjunct to laser photocoagulation, which is still considered gold standard therapy to restore vision during late stages.

Bioflavonoids have been found to possess strong anti-oxidant, anti-inflammatory, anti-angiogenic and anti-apoptotic properties. They have been studied to act on multiple mechanisms and are devoid of any unwanted ocular side effects. Bioflavanoids and other anti-oxidants have been already proved to be very useful in the treatment/prevention of Age-related Macular Degeneration in humans.