Summary of Work

In proposed research work, Dr. Sanjay Kshirsagar has developed novel formulation for treatment two major ocular complications viz. Diabetic retinopathy and Dry eye disease.

Diabetic retinopathy is the worst microvascular complication associated with loss of vision. At present, it is treated by means of invasive method and there is need to develop some topical formulation. Dr. Kshirsagar has developed surface modified nanoparticles of Pioglitazone by using biodegradable polymer PLGA. *In vitro* characterization of prepared nanoparticles showed satisfactory results. *In vivo* investigation showed remarkable reduction in vitreous VEGF levels of rats. Study also proved dose dependent reduction in VEGF. Available evidences prove the effectiveness of prepared formulation in diabetic retinopathy by topical administration. Further; these nanoparticles were suspended in temperature triggered *in situ* gel for treatment of dry eye disease. Dry eye disease is the most common ocular complication which involves topical administration of medicament with high frequency. *In vivo* study on mice showed the increased tear fluid secretion and tear film stabilization in mice when treated with nanoparticles loaded *in situ* gel prepared by Poloxamer 407 and HPMC K4M. Moreover; drug loaded nanoparticle also showed promising results which supports the involvement of PPAR-γ in dry eye disease.

Therefore; based on evidences of preclinical studies, developed formulation can be considered as notable substitute for present treatment of diabetic retinopathy and dry eye disease.

Yours Truly,

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