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THE EFFECT OF PROLACTIN RELEASING GASTROKINETICS ON STREPTOZOCIN INDUCED DIABETIC RETINOPATHY

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To investigate the effect of metoclopramide (MCP), trimethobenzamide (TMB), and domperidone (DOM) on the experimental model of diabetic retinopathy.

Wistar rats were grouped into 5 groups, as follows: control, diabetes mellitus (DM), DM+MCP, DM+TMB, and DM+DOM groups, consisting of 10 rats in each. Streptozocin (STZ) was injected intraperitoneally into four groups to induce diabetes. Six weeks after STZ; MCP, TMB, and DOM treatments were applied to three groups for 15 days, respectively. As far as IOP measurements and Schirmer tests were completed, enucleation was performed for immunohistochemical evaluation of retinal expression with prolactin, VEGF, and CD31.

There were no statistically significant differences in IOP and Schirmer test results among the groups. Based on VEGF, CD31, and Prolactin staining intensity, a score was calculated for each group by dividing the total staining score by the number of rats in the group. Prolactin receptor staining was significantly increased in the ganglion cell layer in all treatment groups ($p<0.05$). While VEGF staining in the control group scored 0.78, the DM group's score increased to 1.28. In the treatment groups, the scores decreased to 0.88 for MCP, 1.11 for TMB, and 0.78 for DOM ($p=0.006$). The CD31 scores followed a similar pattern to VEGF. Diabetes induction nearly doubled the CD31 score to 1.29. Treatment with MCP, TMB, and DOM reduced the scores to 0.75, 0.89, and 0.56, respectively ($p=0.012$).

Anti-dopaminergic MCP, TMB, and DOM treatments used for diabetic gastroparesis displayed a favourable safety profile on IOP and tear-film, as well as increased the amount of prolactin receptors, decreased VEGF and CD31 expression in the retinal ganglion cell layer. In light of these results, we assume that using anti-dopaminergic medications against diabetic gastroparesis may have an additional benefit on diabetic retinopathy.

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