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Genoprotective Effect of Indian Gentian in Type 2 Diabetes Mellitus (T2DM): Comet Assay, Sister Chromatid Exchange and Protein Oxidation Studies

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ABSTRACT The present study was undertaken to study the effect of Indian Gentian (*Enicostemma littorale Blume*), a herb, as a genoprotective agent in type 2 diabetes mellitus (T2DM) patients. For this, a total of 52 T2DM patients were investigated, of which 38 received 500 mg - 1 g Indian Gentian thrice daily escalated over three months (Group 1). The remaining 14 patients were not given the herb (Group 2). Fifteen age and sex matched non diabetic healthy volunteers served as controls (Group 3). All three groups were studied for DNA damage by comet assay and Sister Chromatid Exchanges (SCEs); Group 1 was also investigated for protein oxidation. Paired and unpaired *t* tests were performed at 95% confidence interval. Results of comet assay and SCE studies revealed that in Group 1, post Indian Gentian treatment, normal cell population increased, whereas moderately damaged, highly damaged and apoptotic cell population and SCE decreased as compared to Group 1 (pre-treatment patients) and Group 2 (without treatment patients). In comet assay, statistically significant difference between Group 1 (post-treatment patients) and Group 3 (controls) suggested that the herb was able to decrease the DNA damage but not as low as non-diabetic healthy controls. On the other hand, SCE analysis showed that the herb can reduce such exchanges to as low as the controls. In protein oxidation assay, no significant difference was found between the pre- and post-treatment T2DM patients of Group 1. The present study therefore indicated that overall Indian Gentian may have a significant effect on reducing DNA damage and attenuating SCEs in T2DM patients.