Celiac Disease Treatment: Mitigating Gluten Intolerance Using Punarnavine

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Celiac disease is a serious genetic autoimmune disorder where the ingestion of gluten leads to formation of Immunoglobulin G tissue transglutaminase (IgG anti-TG2) against gluten, damaging small intestine and inhibiting the absorption of important nutrients into the body. If left undiagnosed and untreated, it can lead to development of other autoimmune disorders, as well as osteoporosis, infertility, neurological problems and in rare cases, cancer. Globally celiac disease affects 1 in 100-170 people, while for African- Hispanic and Asian-Americans is 1 in 236 people. Each year in United States, at least 3 million people are affected with celiac disease-97% of them are undiagnosed. Epigenetic changes have emerged as key mechanisms in understanding the causes and to develop treatment for various diseases. This prompted an investigation of a novel treatment affecting epigenome to combat celiac disease using Boerhavia diffusa, a plant which is grown in many parts of India. BALB/c albino mice strains were used as the model for the study. Celiac disease induced BALB/c albino mice were fed with the punarnavine an alkaloid obtained from Boerhavia diffusa extract. Level of IgG anti-TG2s in plasma samples of the mice were also quantified using ELISA.The results showed decrease IgG anti-TG2 level in plasma samples of the mice fed with the punarnavine. RT-PCR (real time polymerase chain reaction) was performed to study the epigenetic changes in the mice. The results showed a large amount of repression of the TNFSF13B and TNFRSF9 mRNA, responsible to induce celiac disease. The suggested technique is more efficient, economically feasible and thus has high potential of commercial value which can be converted into anti-celiac disease treatment.

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