

ABSTRACT

Obesity is a multifactorial disorder that has recently spread over the world and become epidemic. In recent years, obesity has emerged as a widespread global epidemic, characterized by its polyfactor nature. In this study, the effects of probiotics (*Lactobacillus bulgaricus* and *Bifidobacterium*) and local herbs (fenugreek seeds, aloe vera) on body weight, transaminase levels, and histological changes in internal organs (liver, kidney, ovary, and small intestine) in obese and control rats were evaluated. Biochemical analyses were performed for the evaluation of liver and renal functions. The leptin and insulin resistance titres were measured. The current work used a high-energy approach to create nanoemulsions containing probiotics and local herbs, which were further analyzed using UV and FTIR methods. Female Wistar rats (n=160) were divided into sixteen groups with 10 rats in each group. The experimental rats were given a high-fat diet to induce obese. These fatty rats were then treated with a mixture of indigenous botanicals (Aloe vera, fenugreek seeds), probiotics (*Lactobacillus bulgaricus*, *bifidobacterium bifidum*) and both. The rats' body weight was measured every week. After a period of fifteen weeks, the rats were dissected to collect blood samples for biochemical analysis and organs for histological examination. Rats treated with a combination of probiotics and local herbs showed improved results of bilirubin from (4 to 15mg/dl), AST from (110 to 18 mg/dl), and ALT from (52 to 10 mg/dl). Similarly, the renal function test (RFT) also revealed the normal range of urea from (63 to 22 mg/dl) and creatinine from (0.2 to 0.8 mg/dl) after treatment with a combination of probiotics and local herbs. Total cholesterol (TC) and low-density lipoprotein were measured and showed significant difference in obese and control groups. Insulin levels were significantly elevated in obese rats compared to the control group (p-value < 0.0001). The results showed that the impact of nanoemulsions containing probiotics and local herbs protected the central vein, glomerulus, and normal ovulatory function in obese rats. Section of kidney shows recovery of cells of renal corpuscles while cells of PCT rupture in treated groups significantly. Our results suggested that probiotics exert positive effects independently; however, when paired with both local herbs, they yielded notably improved outcomes in obese rats.