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## **Anti-Hyperglycemic Effects of Okara, Corn Hull and Their Combination in Alloxan Induced Diabetic Rats**

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**Abstract:** Okara and corn hull are both considered waste by-products that are rich in dietary fiber. The present study was carried on to investigate the hypoglycemic effects of okara, corn hull and their combination in diabetic rats. Diabetes was induced in male Sprague-Dawley rats by intraperitoneal injection of 120 mg/kg alloxan monohydrate in saline. Diabetic rats were then randomly divided into five groups and received either normal diet (positive control) or diet supplemented with 10% of okara, corn hull individually and mixture of them (50:50) for 4 weeks. Chemical composition and total phenolic content of both okara and corn hull were estimated. The studied parameters included fasting blood glucose, serum insulin and glycated hemoglobin levels, changes in body weights, feed intake and the histopathological changes in the spleen. Results showed that okara contained significantly higher protein and fat than that of corn hull. Total dietary fiber and polyphenols values were found to be significantly greater in corn hull than in okara. Diabetic rats fed diets supplemented with either okara or corn hull individually or a mixture of both gained less weight than that of the diabetic control group. Compared with positive control group, all treatments caused a significant reduction in fasting serum glucose levels, glycosylated hemoglobin and significant increase in serum insulin. The effect was more pronounced in the okara + corn hull supplemented group. Supplementation of either okara or corn hull improve to some extent the histopathological changes observed in the pancreas compared with positive control group. Significant islet structure restoration was observed in diabetic rats on okara+ corn hull supplemented diet as compared with the positive control group. Our findings provided evidence that the combination of okara and corn hull in the diet of diabetic patients might be of great beneficial effects in glycemic control and in reducing the risk of diabetic complications. Further research is required to determine the other health and nutritional benefits of these by-products.

**Key words:** Okara · Corn hull · Diabetic rats · Chemical composition · Insulin · Fasting glucose  
· Glycosylated hemoglobin · Spleen histology

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