Abstract

Diabetes mellitus (DM) is a degenerative disease that causes a considerable loss in terms of health and economics. Control of blood sugar levels in diabetic patients can be done through caloric restriction, exercise and drugs. Many medicinal herbs are claimed to be anti-diabetic potential. Very often, these herbs are combined together as an anti-diabetic formulation. Even though some of them have been scientifically proved, the summative effect of the whole recipe has not been evaluated. The objective of this study was to evaluate the hypoglycemic effect of a Thai herbal drug formulation used to treat diabetes mellitus in experimental rats. The anti-diabetic ethanolic extract (ADE) was prepared from the herbal formulation which consists of 26 medicinal plants. The ADE at doses of 100 and 200 mg/kg and tolbutamide (a standard drug) at 200 mg/kg were given to streptozotocin-induced moderately diabetic rats once a day for 7 days. The blood glucose levels before and after the experiment were measured. The effect of ADE was then further evaluated in the glucose-tolerance test. The ADE at doses of 100 and 200 mg/kg and tolbutamide at 200 mg/kg were given to glucose-loaded rats. The blood glucose levels before, 30, 60 and 120 minutes after the glucose load were measured and compared to those of the control group. Another set of the experiment was done in the similar manner using severe diabetic rats and the dose of the ADE was 200 mg/kg only. It was found that, after 7 days of treatment, the blood glucose levels of the ADE-treated rats as well as of those treated by tolbutamide, at the said doses, were significantly less than that of the untreated diabetic group. In normal rats, after glucose load, the blood glucose dramatically increased and reached its peak within 60 minutes. The rise of blood glucose level was markedly decreased in tolbutamide treated group and this difference was statistically significant ($p<0.05$). ADE at doses of 100 and 200 mg/g showed a hypoglycemic effect in a dose-dependent manner and statistically significant at 60 minutes after the glucose load. However, the hypoglycemic of both tolbutamide and ADE (200 mg/kg) was not observed in severe diabetic rats. These findings suggest that the hypoglycemic of ADE was accomplished through the action of insulin as does tolbutamide. Of all the 26 herbal components of the formulation, only 5 plants were reported of their hypoglycemic effect. Therefore, other pharmacological effects of the formulation should be investigated. In conclusion, the Thai herbal formulation used to treat diabetes mellitus could lower the blood glucose levels in moderately diabetic rats and in glucose-loaded rats but not in severe diabetic rats.