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Antioxidant and anti-inflammatory effects of *Padina pavonia* and *Turbenaria ornate* in streptozotocin/nicotinamide diabetic rats

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The present study was designed to evaluate the effect of two marine brown algae, *Padina pavonia* and *Turbenaria ornate*, on serum and adipose tissue tumor necrosis factor alpha (TNF-α) and oxidative stress in type 2 diabetic rats. Type 2 diabetes was induced by intraperitoneal injection of 120 mg/kg b.w. nicotinamide 30 minutes before injection of 50 mg/kg b. w. streptozotocin. Extracts of both *Padina pavonia* and *Turbenaria ornate* were orally and daily administered at a dose level of 100 mg/kg b.w. for 21 days to diabetic rats. In the diabetic control group, levels of glucose were significantly increased, while serum insulin level was decreased. Hepatic lipid peroxidation was significantly increased in diabetic rats as compared to normal ones. On the other hand, glutathione content and antioxidant activities were significantly decreased. Both tested algal extracts reversed these parameters nearly back to control values. In addition, both algae significantly down-regulated adipose tissue TNF-α mRNA expression in conjunction with decreased serum TNF-α. In conclusion, *Padina pavonia* and *Turbenaria ornate* extracts exert protection to type 2 diabetic rats through their antioxidant and anti-inflammatory efficacies.

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