Based on the above findings, it can be concluded that:

- Eight-week supplementation of fructose diet successfully induced type 2 diabetes associated with insulin resistance, metabolic syndrome and oxidative stress in the rat model.
- Oral administration of PT (20 mg/kg/day) ameliorated insulin resistance, associated metabolic complications and hepatic oxidative stress in fructose-fed diabetic rats.
- PT treatment alleviates diabetic cardiomyopathy by decreasing cardiac oxidative stress, inflammation, and by augmenting mitochondrial biogenesis through activation of AMPK/Nrf2/HO-1 signalling pathway.
- PT exercises anti-oxidative and anti-apoptotic action against myocardial ischemia-reperfusion injury and limits cardiac cell damage via stimulating AMPK signaling in diabetic rats.

Implications of the present study

It has been reported that several therapeutic agents like antidiabetics, ACE inhibitors and AT1 receptor antagonists are administered in a combination to treat the diabetic cardiomyopathy. However, the use of conventional therapy has its own limitations in terms severe adverse effects. The present study suggests that natural substance (PT) is capable of reversing the complications of diabetic cardiomyopathy by suppressing oxidative stress, inflammation and apoptosis, besides lowering the blood glucose levels. Our findings present the experimental basis for potential therapeutic use of PT for acute treatment of diabetes-related cardiomyopathy and suggest PT could be used as an alternative or adjuvant drug for lowering diabetes-induced cardiac complications. However, long-term studies should be designed to determine the appropriate dosage regimen and conclude on the cardioprotective effects of PT in diabetic condition.