EFFECTS OF EDIBLE BIRD'S NEST AGAINST HYPERGLYCEMIA-INDUCED OXIDATIVE STRESS AND ENDOTHELIAL DYSFUNCTION

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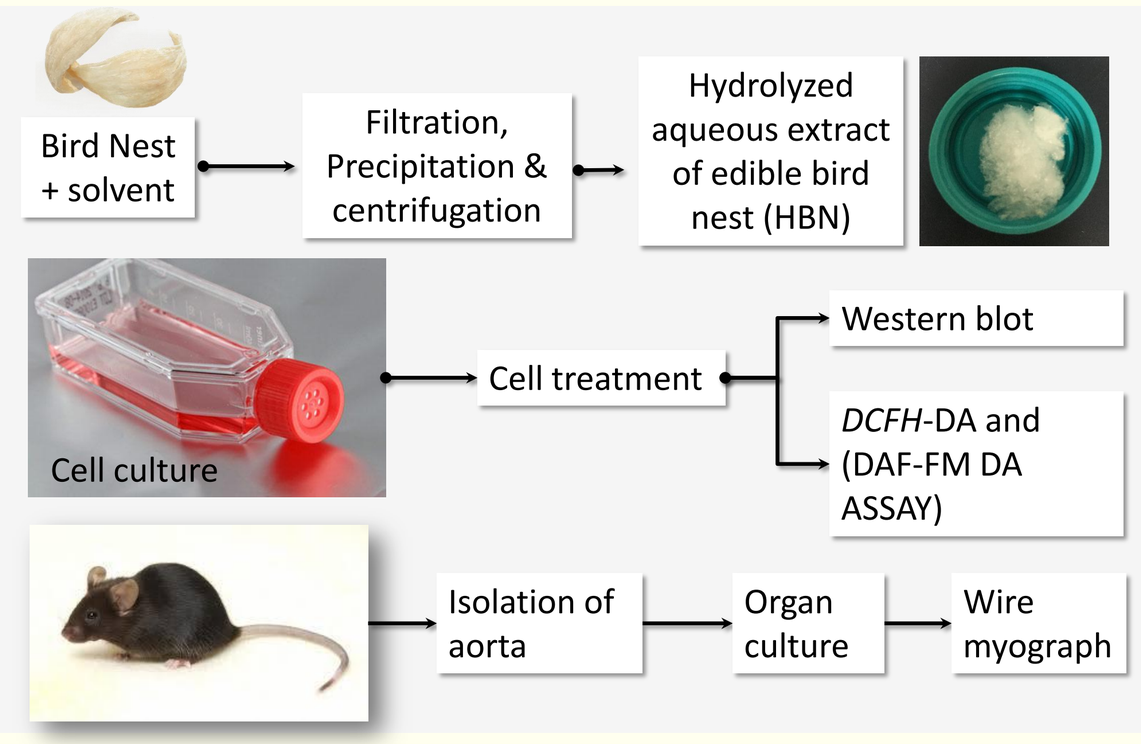
❖ INTRODUCTION

- Increased oxidative stress by hyperglycemia is a major cause of vascular complications in diabetes [1].
- Edible Bird's Nest is traditionally consumed among Asian for its nutritional value [2].
- Previously it has been shown to have anti-oxidative, anti-inflammatory and may improve insulin resistance [2].
- However, it's role in improving endothelial dysfunction due to hyperglyceamia is yet to be elucidated.
- The present study examined the protective effect and mechanism of action of the hydrolyzed aqueous extract of edible bird nest (HBN) against high glucose (HG)-induced endothelial dysfunction and oxidative damage in mouse aorta and human umbilical vein endothelial cells (HUVECs).

❖ METHODOLOGY



❖ RESULTS & DISCUSSION

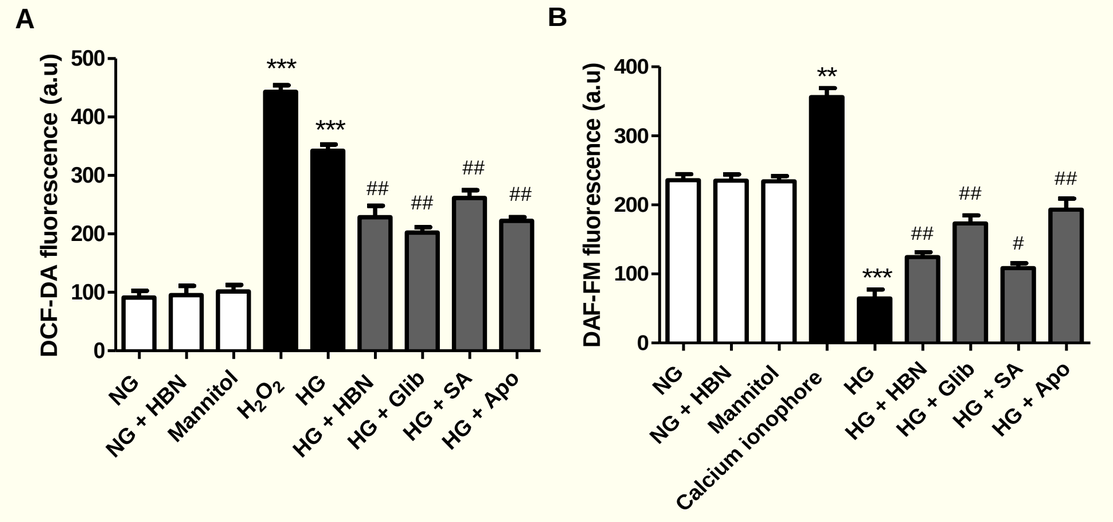


Figure 1: The level of A) reactive oxygen species (ROS) and B) nitric oxide (NO) after treatment with normal glucose (NG, 5 mM), high glucose (HG, 30 mM), mannitol (25mM), H2O2 (200μM), calcium ionophore (5μM), Hydrolysed Bird Nest (HBN, 30 μg/ml), sialic acid (SA, 20 μg/ml), Glibenclamide (Glib, 10 μM) and Apocynin (20 μM) for 48 hours. Results are mean± SEM of 3 experiments. ** p < 0.01 and *** p < 0.001 compared to control; # p < 0.05 and ## p < 0.01 compared to HG.

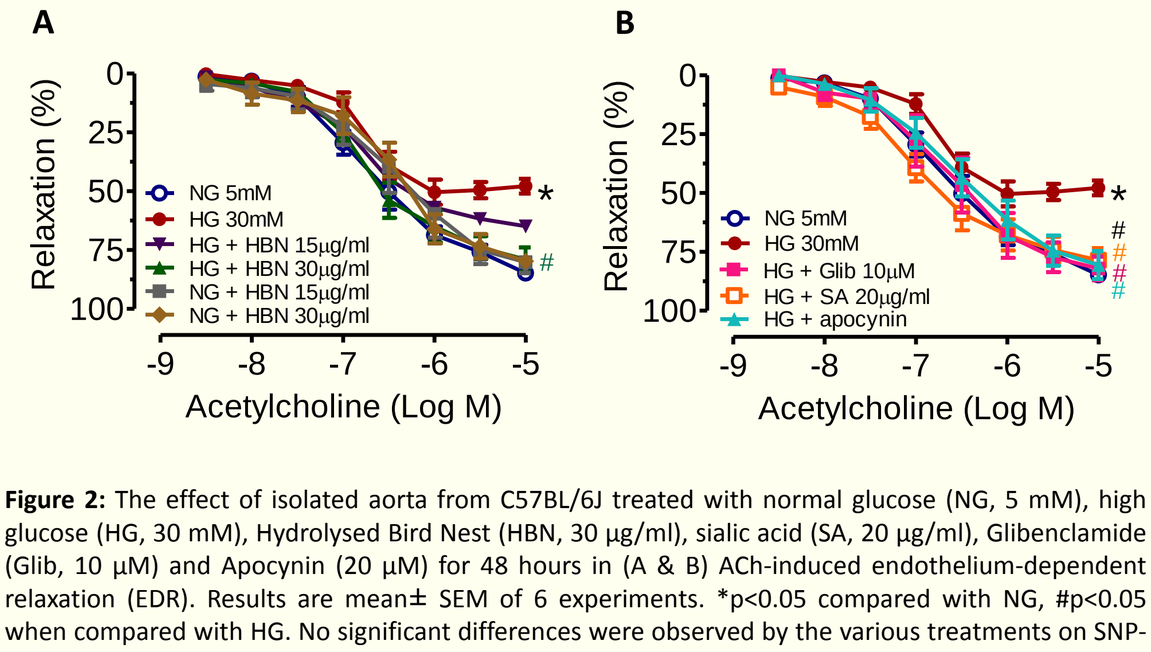


Figure 2: The effect of isolated aorta from C57BL/6J treated with normal glucose (NG, 5 mM), high glucose (HG, 30 mM), Hydrolysed Bird Nest (HBN, 30 μg/ml), sialic acid (SA, 20 μg/ml), Glibenclamide (Glib, 10 μM) and Apocynin (20 μM) for 48 hours in (A & B) ACh-induced endothelium-dependent relaxation (EDR). Results are mean± SEM of 6 experiments. *p<0.05 compared with NG, #p<0.05 when compared with HG. No significant differences were observed by the various treatments on SNP-induced endothelium-independent relaxation (not shown).

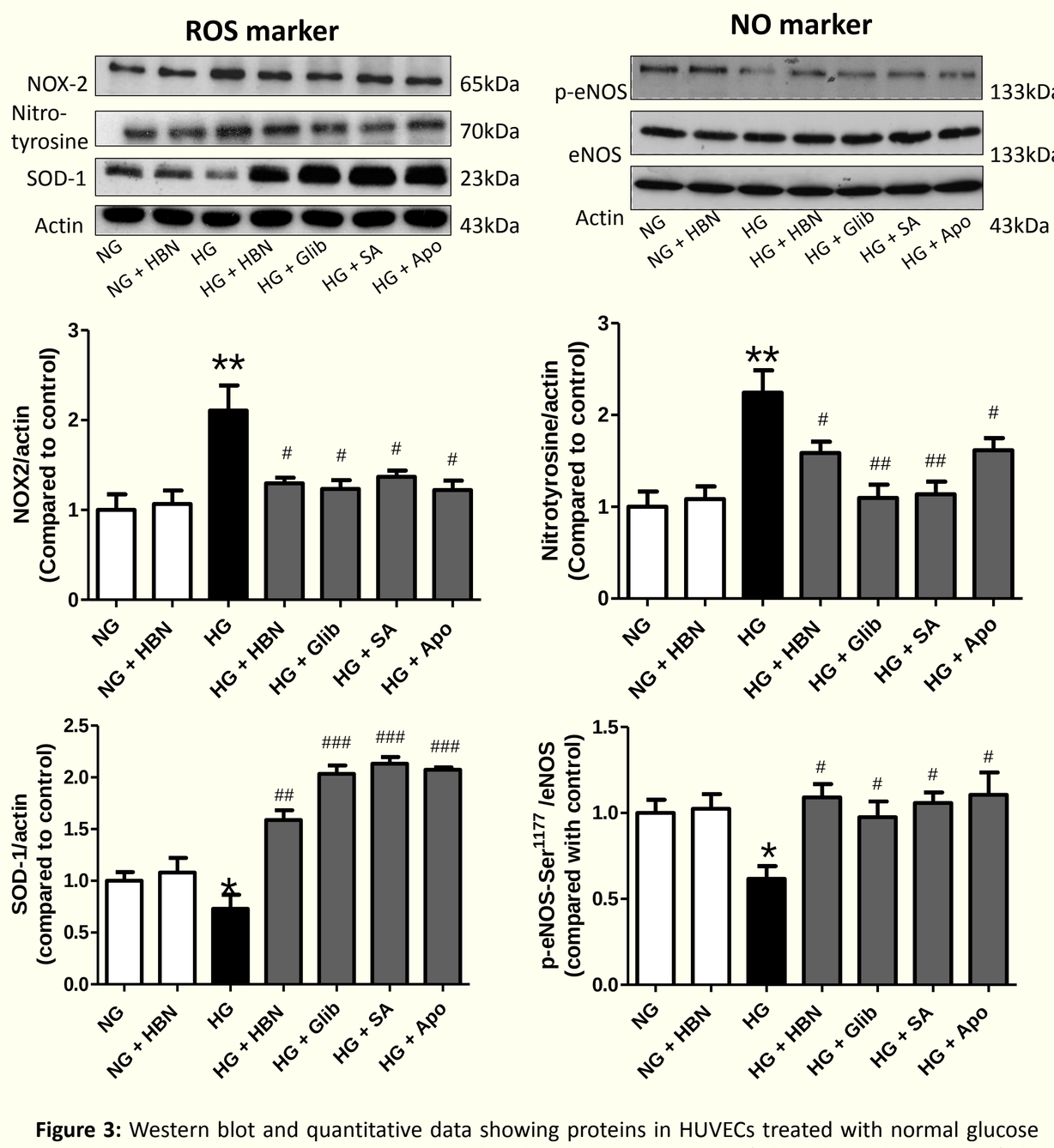
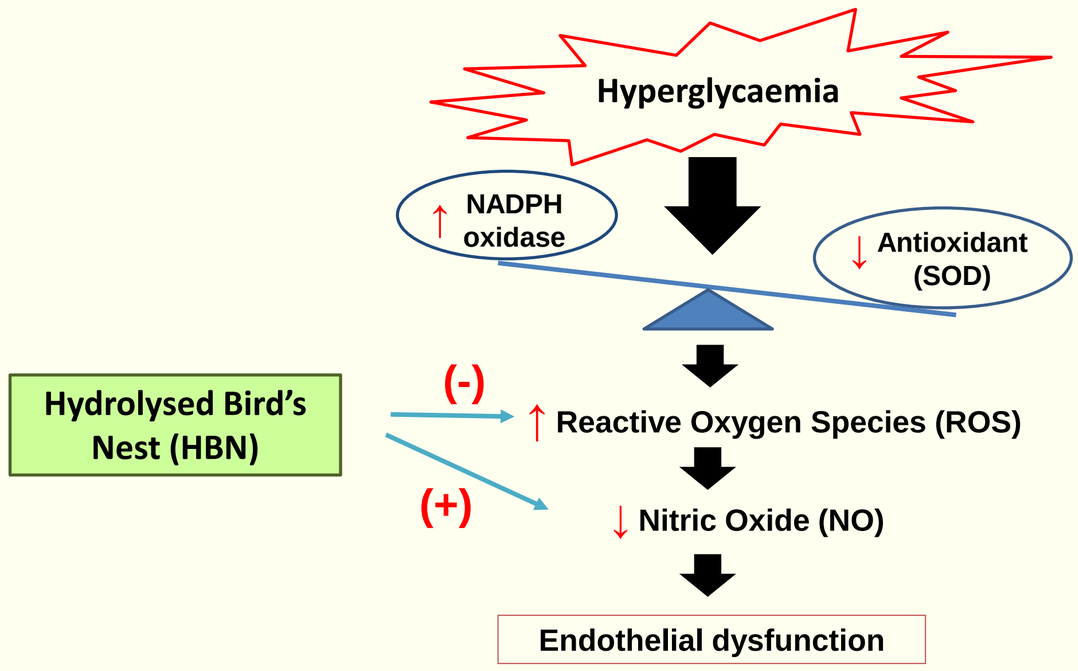


Figure 3: Western blot and quantitative data showing proteins in HUVECs treated with normal glucose (NG, 5 mM), high glucose (HG, 30 mM), Hydrolysed Bird Nest (HBN, 30 μg/ml), sialic acid (SA, 20 μg/ml), Glibenclamide (Glib, 10 μM) and Apocynin (20 μM) for 48 hours. Results are means + SEM 3 separate experiments. *p<0.05 and ** p < 0.01 compared to control; # p< 0.05, ## p< 0.01 and ### p<0.001 compared to HG.

❖ CONCLUSION

- HBN protects endothelial cells against high glucose induced-oxidative damage by inhibiting oxidative stress, thus elevating NO availability and restores endothelial function in isolated mouse aorta and HUVECs.
- This result demonstrates the potential role of HBN in preserving endothelial function and management of micro and macrovascular complications induced by hyperglycemia/oxidative stress in diabetes.



❖ REFFERENCES

1. Pitocco, D., et al. (2013). "Oxidative stress in diabetes: implications for vascular and other complications." International journal of molecular sciences 14(11): 21525-21550.
2. Zhang, Y., et al. (2015). Edible Bird's Nest Prevents High Fat Induced Insulin Resistance in Rats. Journal of Diabetes Research 2015, Article ID 760535.

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