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## Title page

# Antioxidant activities of chitosans and its derivatives in *in vitro* and *in vivo* studies

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## Highlights

- Chitosan and its derivatives is useful for oxidative stress related diseases.
  - Chitosan and its derivatives resulted in reduction of hypocholesteremia and uremia.
  - The low-dose SDACNFs decreased the levels of uremic toxins as pro-oxidants.
- The low-dose SDACNFs might result in reduction of cardiovascular disease.
- The change of oxidative stress was correlated with serum indoxyl sulfate levels.

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