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## Antioxidant and anti-dyslipidemic effects of polysaccharidic extract from sea cucumber processing liquor

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### Abstract

**Background:** Sea cucumber is a seafood of high nutritional value. During its processing, sea cucumber processing liquor is routinely produced, and usually discarded as waste. The chemical composition of this processing liquor is similar to sea cucumbers themselves. Hence, valuable ingredients, such as functional polysaccharides, could be enriched from them.

**Results:** Biologically active polysaccharides from sea cucumber processing liquor were extracted through protease hydrolysis and electroosmosis. The analysis reveals that these polysaccharides extracts from sea cucumber processing liquor (PESCPL) are predominantly composed of mannose, alongside with some glucose and fucose. The antioxidant activity of PESCPL was analyzed using electron spin resonance *in vitro*. It was demonstrated that PESCPL could scavenge 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals, hydroxyl radicals and superoxide anion radicals effectively. The effect of PESCPL was investigated *in vivo* by using mice model fed with high fat diets with/without PESCPL supplement, it was shown that PESCPL could increase the catalase and superoxide dismutase activity in the serum, and decrease its MDA content. Furthermore, the mice fed with PESCPL diet showed a considerable decrease in the serum cholesterol and triglyceride, and an increase in high-density lipoprotein cholesterol levels.

**Conclusions:** Our research highlights that polysaccharide extracts from the sea cucumber processing liquor are natural antioxidants, and it could be utilized as therapeutic supplement for dyslipidemia.

**Keywords:** biologically active polysaccharides; catalase; cholesterol; electro osmosis; electron spin resonance; glucose; mannose; seafoods; superoxide dismutase;

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