

# Nutritional assessment and effects of heat processing on digestibility of Chinese sweet potato protein

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## Abstract

The amino acid composition, *in vitro* and *in vivo* digestibility as well as trypsin inhibitor activity (TIA) of sweet potato protein (SPP) were evaluated. The effects of different types of heat processing on the *in vitro* digestibility and TIA of SPP were also investigated. The results showed that SPP was deficient in lysine, but rich in threonine, valine, tryptophan and aromatic amino acids. SDS-PAGE analysis showed that native SPP was not easily digested by pepsin-pancreatin enzyme system, whereas commercial soy protein isolate (SPI) displayed a good *in vitro* digestibility. Autoclaving (127 °C for 20 min, 0.145 MPa) significantly improved *in vitro* and *in vivo* digestibility of SPP. The *in vivo* digestibility of autoclaved SPP was 95.1%, which was comparable to that of SPI (96.1%) and casein (97.4%), and remarkably higher than that of native SPP (50.4%). PDCAAS of native SPP and autoclaved SPP were 0.36 and 0.66, respectively. In addition, autoclaving also markedly decreased TIA of native SPP from 67.8 to 2.0 mg trypsin/g protein. Autoclaving enhanced *in vitro* digestibility and decreased TIA of native SPP, thereby improving its food qualities. Although SPP was deficient in lysine, autoclaved SPP could be utilized as a good protein source for human consumption.

## Keywords

- Sweet potato;
- Sweet potato protein;
- Amino acids;
- Heat processing;
- *In vitro* digestibility;
- *In vivo* digestibility;
- PDCAAS;
- Trypsin inhibitors;
- Food analysis;
- Food composition

