Antioxidant and anti-obesity properties of local chilies varieties in Malaysia

ABSTRACT

Obesity is a serious health concern as it may initiate common chronic diseases. Chili pepper is an important spice that brings spiciness and commonly used in cuisines. However, the antioxidant and anti-obesity properties of chili varieties in Malaysia has not yet been fully investigated. Therefore, this study aimed to determine the antioxidant (content and activity) and anti-obesity properties of five different varieties of local chili peppers. The antioxidant activities of the extracts were determined through ferric-reducing antioxidant power (FRAP) and 2, 2'azinobis-(3-ethyl-benzothiazoline-6-sulphonic acid (ABTS) assays. Cell cytotoxicity of the selected chili extracts was determined in 3T3-L1 pre adipocytes using cell viability assay (MTT) assay. Whereas the ability to inhibit oil accumulation in fully differentiated 3T3-L1 adipocytes of the selected chili pepper extracts was assayed using Oil Red O staining. The results showed that Kulai 568 pulp extract had the highest level of total phenolic content (TPC) (47.88 ± 0.220 mg GAE/g), whereas Centil pulp extract had the highest level of total flavonoid content (TFC) (26.60 ± 0.52 mg QE/g). In term of antioxidant activities, Bara pulp extract had the highest value in FRAP (3.058 ± 0.002 mM Fe2+/mg extract) and ABTS (IC50 = 12.411 ± 0.025). High performance liquid chromatography (HPLC) analysis, Bara pulp extract has the highest level of capsaicin (72.271 ± 0.957 µg/ml). In terms of inhibition of oil accumulation Centil seed extract presented the best result (69.09-92.20%), while Bara pulp extract inhibited the most pancreatic lipase activity (IC50 = 4.84 ± 0.57 µg/ml). Thus, it is suggested that Centil seed and Bara pulp extracts can be a potent antioxidant and anti-obesity agents.

Keyword: Anti-obesity properties; Antioxidant compounds; Capsaicin; Chilli pepper; Diet interventions