

Different maturities and varieties of coconut (*Cocos nucifera* L.) flesh as fat replacers in reduced-fat meatballs

ABSTRACT

Meatball is a popular meat product in Malaysia but it has high-fat content that could often bring health problems such as non-communicable diseases. This study aimed to produce reduced-fat meatballs using coconut flesh with three different varieties (i.e. MAWA, MYD, and Pandan) at two levels of maturities (young and matured). Meatballs with animal fat were used as control. All samples were analysed for the proximate composition, cooking yield, water holding capacity (WHC), texture and sensory properties. Two-way ANOVA was conducted to determine the interaction between the maturity and variety of the coconut for all parameters with post-hoc analysis to observe the significant difference ($p < 0.05$). The maturity and variety of coconuts showed significant interactions ($p < 0.05$) in affecting most of the meatball properties. Young coconuts were superior to mature coconut with better cooking yield ($p < 0.05$), texture and sensory properties. Meatballs with young Pandan had the highest moisture content ($p < 0.05$) (71.78%), low fat (3.56%) ($p < 0.05$), and overall sensory acceptance. Meatballs with young MYD had low fat content (3.50%) ($p < 0.05$), high WHC (52.11) ($p < 0.05$), high redness (6.09) ($p < 0.05$) with a high score of the colour (7.13) taste (7.17), texture (7.30) and overall acceptability (7.03) for the sensory properties. Since both young Pandan and young MYD managed to reduce the fat content in the meatballs as compared to the control sample and other treatments while maintaining the quality characteristics of the meatballs, both can be concluded to have potential as the fat replacers in the production of reduced-fat meatballs.

Keyword: Coconut flesh; Fat replacer; Low-fat meatballs; Mature coconut; Young coconut