



Research article

APPLICATION OF MICROCRYSTALLINE CELLULOSE EXTRACTED FROM OIL PALM EMPTY FRUIT BUNCHES (EFB) AS A THICKENING AGENT IN ARTIFICIAL MEAT

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<https://doi.org/10.34302/crpjfst/2025.17.4.13>

Article history:

Received:

April 19th, 2025

Accepted:

December 3rd, 2025

Published

December 30th, 2025

Keywords:

Artificial meat;

Microcrystalline cellulose;

Red bean flour;

Soybean flour.

ABSTRACT

Empty fruit bunches (EFB), a byproduct of palm oil processing, contain approximately 40% cellulose, presenting a valuable resource for sustainable applications. This study explores the extraction of microcrystalline cellulose (MCC) from EFB and evaluates its effects on the characteristics of artificial meat. MCC was incorporated at varying concentrations (1%, 2%, and 3%) into artificial meat formulations using different red bean-to-soybean flour ratios (1:3, 3:1, and 1:1). Fourier-transform infrared (FTIR) spectroscopy confirmed the successful extraction of MCC, as evidenced by the presence of OH, CH, C=C, C-O, and C-O-C functional groups. The addition of soybean flour increased moisture content (50.26%–53.55%), ash (1.63%–1.66%), and protein (1.55%–1.63%), while red bean flour contributed to higher fat (1.59%–2.22%) and carbohydrate levels (44.01%–46.3%). The 1:1 flour ratio significantly enhanced crude fiber content (2.19%–3.8%). Although MCC addition had minimal impact on the overall chemical composition, it notably improved the fiber content of artificial meat, suggesting its potential as a functional ingredient for texture enhancement and dietary fiber enrichment.
