

Title:

Effect of dual-functional coating of chicken fillet with pectin-curcumin-lemongrass oil emulsion on the shelf-life stability and fat uptake during frying

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Abstract:

This study aims to formulate the optimal pectin-curcumin-lemongrass oil emulsion (PE) for coating of chicken fillet at 50:50%, 70:30%, and 90:10%, based on microbial growth inhibition, freshness consistency, and fat absorption during frying. Throughout the 7 days of storage, chicken fillet coated with 70:30% PE showed significant ($P < 0.05$) suppressive activity against psychrophilic bacteria ($8.09 \pm 0.00 \log_{10} \text{CFU g}^{-1}$) compared to non-coated sample ($8.27 \pm 0.06 \log_{10} \text{CFU g}^{-1}$). In contrast, 90:10% PE coating inhibited the growth of yeasts or moulds on chicken fillet at $8.24 \pm 0.28 \log_{10} \text{CFU g}^{-1}$, compared to non-coated sample ($9.16 \pm 0.14 \log_{10} \text{CFU g}^{-1}$). The 70:30% PE coating showed a better fillet's toughness ($18.30 \pm 1.32 \text{ N mm}^{-1} \text{ s}^{-1}$) and firmness ($1.49 \pm 0.22 \text{ N mm}^{-1}$) when compared to fillet without coating. After 7 days of storage, coated and uncoated samples showed the same total colour difference (E value) indicating PE coating preserved the texture of fillet and colour. Both coated samples (70:30% and 90:10%) reduced fat uptake during frying by 13.70%-14.25%. The application of PE coating at 90:10% was effectively functioned as an excellent coating to preserve the quality and safety of fillet.