

Efficacy of Protein Solutions as Lipid Absorption Barriers During Frying of Fried Chicken Patties

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Breading meats before deep frying produces products with appealing characteristics, but with increased fat content. Adding soluble protein coatings such as whey protein isolate (WPI) over a batter before frying has been shown to act as a barrier to inhibit fat absorption during frying. However, fresh and dried egg albumin, β -lactoglobulin (B-Lac), and α -lactoalbumin (a-Lac) have not been extensively tested for their effectiveness at blocking the absorption of fat into a deep fat fried food. The objective of this study was to determine the effect on lipid, moisture, and other physical properties of dipping chicken patties in solutions of these proteins after breading but before deep fat frying. Ground chicken patties (20g) were battered then breaded using Japanese bread crumbs (JBC) or crackermeal (CM), then some were dipped into soluble the protein solutions before frying. Both the soluble egg protein solutions were adjusted to pH 3, 5, or 7, while B-Lac and a-Lac solutions were tested at 2.5% and 5% solution at pH 2. Undipped patties or patties dipped in water served as controls. Crust thickness, color, lipid, moisture and yield were measured using standard techniques. In JBC patties, both egg albumin dips and B-Lac resulted in reduced lipid content for some samples compared to control patties. Patties dipped in reconstituted dry egg albumin at pH 3 and 7, fresh egg white at pH 7, and 2.5% B-Lac resulted in significant lipid reduction compared to control patties. These effects were not observed for CM patties. For moisture, egg albumin dipped JBC patties exhibited greater moisture retention compared to undipped controls, with patties dipped in fresh egg white at pH 7 showing significantly higher moisture retention than the undipped control. These effects were not observed for B-Lac or a-Lac dipped patties. The most efficient lipid absorption inhibition in each system was 26.9% for dry egg white at pH 3, 17.1% for fresh egg white at pH 7, and 20.7% for 2.5% B-Lac at pH 2. a-Lac was not effective. Since WPI has been shown to effectively inhibit oil absorption during frying, B-Lac, the principal component of WPI, may be the protein responsible. Use of dry egg white solution shows potential as an oil absorption inhibitor during deep fat frying.