

**Project Title:** Effect of Cold Pasteurization on the Color and flavor of Frozen, Packaged Ground Beef Patties

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**Completion Date:** August 2001

**Layman's Summary:**

The effects of e-beam irradiation (transmissions of electrons) levels and chill state (frozen verses thawed) on the sensory traits of odor, flavor and color changes in frozen ground beef patties were studied. Color was dramatically affected as irradiation levels increased. Color, evaluated both visually and objectively, became darker and more reddish brown in appearance. Patties evaluated in the thawed state had a slightly "redder" color then the frozen patties. The color of the patties that were irradiated at low doses (0.5-1.1 KGY) were not different between treatments, but did show slight color differences when compared to the control patties. Off-odor in cooked ground beef patties was not significantly affected by irradiation levels investigated in this study. However, patties cooked from the thawed state did have slightly less off-odor than patties cooked from the frozen state. Color changes due to irradiation could cause end users to perceive quality changes in ground beef.

In summary, irradiation at low doses (1.1 KGY) showed a slight difference in color attributes when compared to the control patties; however, there was no difference in odor or flavor when control patties were compared to treatment patties at this dosage. The color change is slight and it is likely that consumer acceptance could be achieved with products irradiated at low doses. Continued research to improve or reduce the color change that does occur would be beneficial in order to increase the marketability of this type of product.

