

Characterization of Fresh, Charcoal Flue Gas Treated and Boiled Beef Samples Using FTIR For Consumption Safety

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Abstract : Flesh from animals is one of the most nutritious food materials that is rich in Vitamin B12, B3 (Niacin), B6, iron, zinc, selenium, and plenty of other vitamins and minerals and a high content of fats Meat consumption projection indicates an increase from 5.5 to 13.3 million tons by 2025 and this demand has been associated with livestock revolution. This study used charcoal flue gases sourced from the combustion of charcoal briquettes to prolong beef shelf life. The FT-IR technique is based on the specific absorption of infrared radiation by carbon monoxide and carbon dioxide molecules. The characterization of the functional groups was done using Fourier transform infrared spectroscopy (Shimadzu IR Tracer-100). The fresh, treated and boiled beef was ground with potassium bromide (KBr) into pellets and analyzed using FT-IR at a range of 400-3600 cm^{-1} . The reaction of fresh, charcoal flue gas treated and boiled beef samples are as shown in the FT-IR spectrums. The fresh and boiled beef spectrums are similar, while the charcoal flue-treated beef samples show distinct peaks at 2100 and 2290 cm^{-1} , which correspond to carbon monoxide and carbon dioxide, respectively. The study proposes the use of FT-IR in the determination of beef for consumption quality studies.

Keywords : FT-IR, charcoal flue gases, beef, charcoal flue gases

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