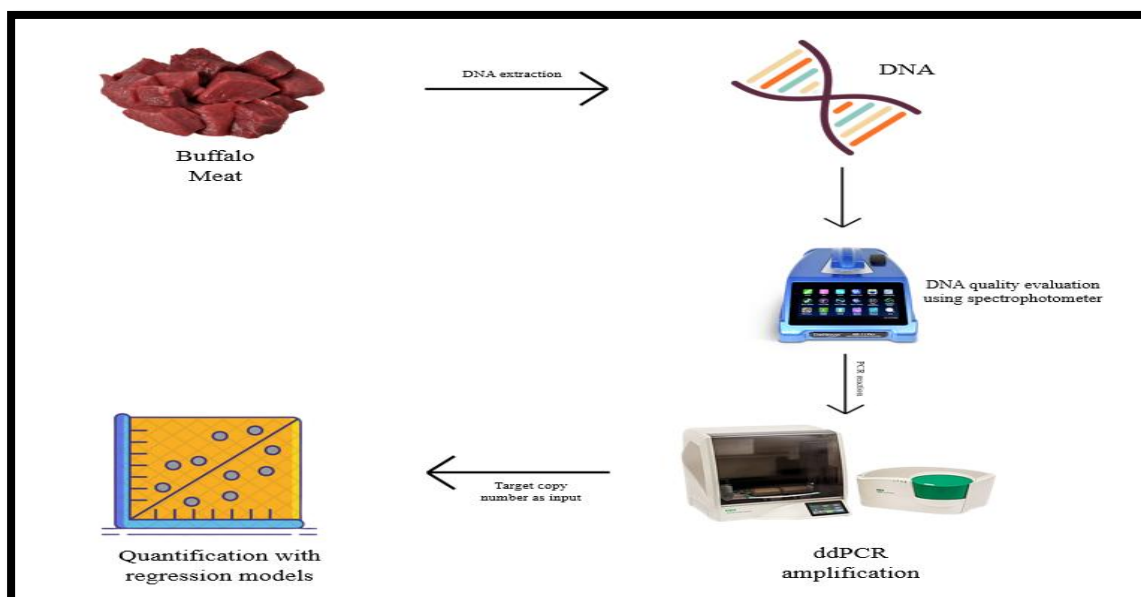


Technology for quantification of buffalo meat substitution levels in meat and meat products of other species using digital PCR

Inventor: Dr. Vishnuraj M.R.

Brief description about technology

Buffalo meat is often used to adulterate costlier meats such as mutton or chevon for economic gain, especially in processed products where common molecular methods lack sensitivity due to the complex nature of food matrices and the presence of PCR inhibitors. To overcome these challenges, a droplet digital PCR (ddPCR) assay targeting the buffalo-specific melanocortin 1 receptor gene was developed to specifically quantify the level of adulteration. Statistically validated linear regression models were employed to correlate gene copy number with DNA input and, subsequently, with the proportion of buffalo meat in the sample. The assay was validated according to international guidelines and was effectively applied to real-world samples, offering a robust tool for both detection and quantification in food fraud investigations. The developed ddPCR assay can be commercialized as a "Buffalo Detection and Quantification Method" and marketed to both government and private laboratories in India, supporting food safety in testing of animal-origin products. Furthermore, the applicability of this technology to other items, such as ghee and tallow—with predicted accuracy—may lead to broader acceptance and generate significant commercial potential.



Basic process of the developed technology (ddPCR assay with regression models)



भा.कृ.अनु.प.-राष्ट्रीय मांस अनुसंधान संस्थान

(पूर्व भा.कृ.अनु.प.-राष्ट्रीय मांस अनुसंधान केंद्र)

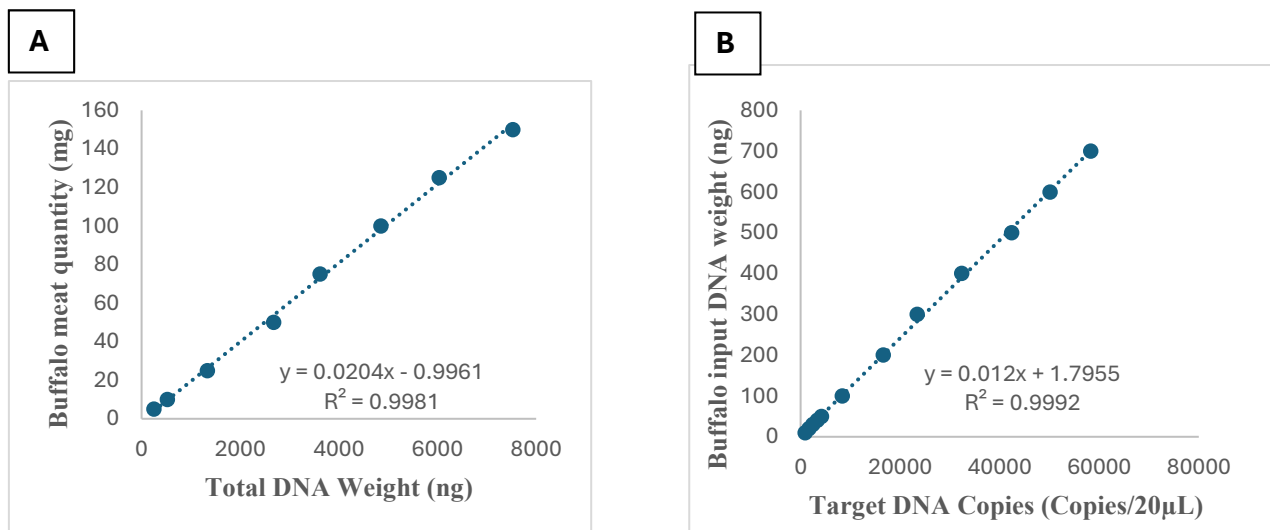
चेंगिचेर्ला, पोस्ट बॉक्स सं 19, बोडुप्पल, हैदराबाद - 500 092, तेलंगाना भारत



ICAR - National Meat Research Institute

Chengicherla, P.B. No. 19, Boduppal PO, Hyderabad-500 092, Telangana, India

(ISO 9001:2015 और FSSC 22000 प्रमाणित, ISO/IEC 17025:2017 NABL मान्यता प्राप्त, FSSAI रेफरल प्रयोगशाला)



Developed regression models connecting buffalo meat weight to target DNA copies obtained from ddPCR analysis

For further details please contact:

Director,

ICAR - National Meat Research Institute

Chengicherla, P.B. No. 19, Boduppal PO, Hyderabad-500 092, Telangana, India

Phone: 040-29801672/73/74; Email: director.nmri@icar.org.in; Website: <https://nmri.res.in>