Abstract #38

Analyzing Meat Tenderness in Beef Cattle: Saraf Gene

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The objective of this study was to analyze the possible connection of a single nucleotide polymorphism (SNP) developed in the SARAF Gene. The ultimate goal was to pinpoint the location within chain reaction and project it's adding factors towards the increase meat tenderness and palatability traits in a specific population of beef cattle. The population ranged from purebred Angus to purebred Brahman. Experimental procedures comprised DNA extraction and PCR and measuring and analyzing the association of each particular breed group's tenderness utilizing Warner-Bratzler Shear Force (WBSF).
The methods of the research were comprised of collecting blood samples from each breed group and labeling each individual sample by with the assigned number to each cattle in that specific group. After finalizing the collection, we then proceed to perform DNA extractions from each individual sample until completed. Materials utilized aside from our samples in the process were from the QIAamp DNA Mini Kit. The kit provided us with silica-membrane-based nucleic acid purification from the blood utilizing rapid purification of high-quality, ready-to-use DNA, Consistent, high yields and completely removing of contaminants and inhibitors. Leading to analyzing Polymerase chain reaction (PCR) which amplified a few copies of a segment of DNA across several orders of magnitude, generating thousands to millions of copies of a particular DNA sequence.
Upon being assigned a specific gene study on the SARAF gene, discovering that is located on the 27th chromosome, and often abbreviated as TME66 or MGC8721. The gene acts as a stored operated calcium entry associated regulatory. The protein resides in the endoplasmic reticulum and associates with STIM1, having the ability to facilitate the inactivation of Stored Operated Calcium Entry (SOCE). Following accordingly, Calcium release activated channel (CRAC channel) is then activated to slowly replenish the level of calcium in the endoplasmic reticulum. Resulting in its accomplished key role which is to shape cytoplasmic calcium signals and determine control the content of the major intracellular Ca2+ stored in the cell.
The results of the study is important because researchers today are still in search of the leading factors causing meat tenderness post mortem other than the known calpains and calpastatin. Utilizing DNA extraction, PCR and Warner-Bratzler Shear Force to measure and analyze the association of each particular breed group's tenderness and genetic relation we were able to show that the SARAF gene is related to beef tenderness.