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THE DIFFERENCES BETWEEN UNCOOKED MEAT AND MEAT FLOSS FROM TWO DIFFERENCE SOURCES OF MEATS (BEEF AND CARABEEF)

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THE DIFFERENCES BETWEEN UNCOOKED MEAT AND MEAT FLOSS FROM TWO DIFFERENCE SOURCES OF MEATS
(BEEF AND CARABEEF)

By

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CERTIFICATION FORM

It is certified that **NURUL NURALIYA BINTI SHAHRAI**, matric no. **170571** has completed his project entitle **"The Differences Between Uncooked Meat And Meat Floss From Two Difference Sources Of Meats (BEEF AND CARABEEF)"** and submitted to the faculty of agriculture as a partial fulfillment of the requirement of SHW 4999 (Final Year Project) for the degree of bachelor of Agriculture in Animal Science.

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LIST OF ABBREVIATIONS

DM	Dry Matter
CP	Crude Protein
CF	Crude Fat
L*	Lightness
a*	Redness
b*	Yellowness
Kg	Kilogram
cm	Centimeter
^{o}C	Degree Celsius
%	Percentage
SEM	Scanning Electron microscope
LD	Longissimus Dorsi
ST	Semitendenous
GM	Gluteus Medius
DL	Drip Loss
CK	Cooking loss
kgf	1 kilogram force/ Newton
µm	micrometre

THE DIFFERENCES BETWEEN UNCOOKED MEAT AND MEAT FLOSS FROM TWO DIFFERENCE SOURCES OF MEATS (BEEF AND CARABEEF)

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Keywords: Beef, imported beef, carabeef, beef floss, physical characteristic, chemical composition, histological characteristics.

ABSTRACT

Meat is a source of protein, vitamins and mineral in diet but most of meats cannot be differentiated after had being processed especially red dark meat such as cattle meat (beef) and buffalo meat (carabeef). In term of price, beef was more expensive then carabeef .Visually, both type of meat could be differentiated by their fat color and this parameter was the most importance thing. There was no significant differences between value of hue but significantly difference ($p<0.05$) in chroma and color. Beef mostly showed chroma 3,very pale yellow but carabeef showed 1-2 chroma level. In this experiment, both meats were evaluated based on *Warner-Bratzler shear force* test, color, ultimate pH, chemical composition, and histological of each samples by using Scanning electron microscope (SEM). By selecting some part of meat from fresh market which were *Longissimus dorsi* (LD;Loin) muscle ,*Gluteus Medius* (GM; Rump) muscle and *Semitendenous* (ST;Round) muscle , the raw beef gave the pH level 5.89, higher ($p<0.05$) than imported beef (5.67) and carabeef (5.61). The result was almost the same which ultimate pH<6.0. The percentage of drip loss showed the range in between 11.36%-12.37% with no significantly difference ($p>0.05$). Percentage of cooking loss also gave the same result as percentage of drip loss ($p>0.05$) which in between 25.40-32.38%. The meat color of carabeef more reddish than beef and imported beef but the range was in between L*=30-L*=32.4 with slightly difference ($p>0.05$). The toughest meat texture ($p<0.05$) was indicated by carabeef with 1454.5 kgf

and beef showed the lowest force (484.9 kgf) for machine needed to clamp the meat. Beef gave higher moisture content (81.45%) than carabeef (79.04%) and imported beef (79.08%). Fat content in raw meats for making meat floss was in between 0.15-0.40% with ($p>0.05$). Higher crude protein was showed in beef (19.56%) than imported beef (18.78%) and carabeef (18.48%).Meat floss was one of the traditional meat based-product popular among Malaysians. Three commercial meat floss were prepared by using *Semitendenous m*. (ST;Round) from three type of samples as collected from markets and analyzed to determine their physical characteristics, chemical composition, histological view and sensory evaluation. The results showed that pH and tenderness of meat floss were in between 5.28-5.60, 333-350 kgf, and local beef floss show the highest ($p<0.05$) pH level (5.56) and tenderness (345.46 kgf). All three type of meat floss showed the brightness range in between 20.57%-21.57%, ($p>0.05$) but the highest redness and yellow pigment percentage was imported meat floss with 9.1% and 11.11% with ($p<0.05$). The result moisture, fat and protein contents were within the range of 11.0-13.60%, 17.30-19.30%, 26.11-31.95%, respectively. Histological characteristic of raw meats and meat floss was evaluated by SEM and the result showed that the sarcomere length and the diameter size of muscle fiber influenced tenderness of meat. Sensory evaluation showed that panelists cannot differentiate three (3) type of the meat floss and the appearance almost the same ($p>0.05$). Without the panelists knowing the sample sources, panelists selected that the imported beef floss as slightly higher ($p<0.05$) palatability score than another. However, there was no significant difference between overall acceptability for local meat floss, imported meat floss and carabeef floss. So, as a conclusion, beef and carabeef had a lot of similarity in term of their meat floss and their raw physiochemical characteristics but their fat color was the obviously comparable.

PERBEZAAN ANTARA DAGING MENTAH DAN DAGING FLOSS DARI DUA SUMBER DAGING (DAGING LEMBU DAN DAGING KERBAU)

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Kata kunci: Daging lembu, daging lembu import , daging kerbau , serunding daging, ciri-ciri fizikal , komposisi kimia , ciri-ciri histologi.

ABSTRAK

Daging merupakan sumber protein,vitamin dan mineral dalam diet tetapi kebanyakan daging tidak boleh membezakan selepas telah diproses terutamanya daging merah gelap seperti daging lembu dan kerbau. Dari sudut harga, daging lembu lebih mahal berbanding daging kerbau . Tetapi dengan mata kasar, lemak kedua-dua jenis daging ini boleh dibezakan dan ukuran ini adalah paling penting. Warna lemak adalah perkara yang paling penting untuk membezakan antara daging lembu dan carabeef. Tidak ada perbezaan yang signifikan antara nilai warna tetapi ketara perbezaannya ($p < 0.05$) dalam kroma. Daging lembu kebanyakannya menunjukkan kroma 2/3 iaitu kuning pucat tetapi kerbau menunjukkan tahap kroma 2/1. Di dalam eksperiment ini, kedua-dua daging telah dinilai berdasarkan Warner-Bratzler ujian daya keliatan, warna, pH muktamad, komposisi kimia, dan histologi setiap sampel dengan menggunakan Mikroskop Imbasan Elektron (MIE). Dengan memilih beberapa bahagian daging dari pasaran segar iaitu otot *Longissimus dorsi* (LD; Pinggang), otot *Gluteus Medius* (GM; Rump) dan otot *Semitendenous* (ST; Round), daging lembu mentah memberikan tahap pH 5.89, lebih tinggi ($p < 0.05$) daripada daging lembu yang diimport (5.67) dan daging kerbau (5.61). Hasilnya adalah hampir sama dengan nilai muktamad iaitu pH <6.0. Peratusan kehilangan titisan menunjukkan julat di antara 11.36% -

12,37% tanpa perbezaan ketara (p> 0.05). Peratus kehilangan memasak juga memberikan hasil yang sama seperti peratusan kehilangan titisan (p> 0.05) yang dalam antara 25,40-32,38%. Warna daging kerbau lebih merah berbanding daging lembu dan daging lembu import tetapi peratusannya pelbagai adalah antara L * = 30- L * = 32.4 dengan sedikit perbezaan (p> 0.05). Tekstur daging paling liat (p <0.05) telah ditunjukkan olehdaging kerbau dengan 1454,5 kgf dan daging lembu menunjukkan daya yang paling rendah (484,9 kgf) diperlukan oleh mesin untuk menggigit sampel daging. Kandungan lembapan yang lebih tinggi ditunjukkan oleh daging lembu (81,45%) berbanding daging kebau (79,04%) dan daging lembu import (79,08%). Kandungan lemak dalam daging mentah untuk membuat serunding adalah di antara 0,15-0,40% dengan (p> 0.05). Protein mentah dalam daging lembu (19.56%) telah menunjukkan lebih tinggi daripada daging lembu yang diimport (18.78%) dan carabeef (18.48%). Daging serunding adalah salah satu makanan tradisional berasaskan produk daging yang popular dalam kalangan rakyat Malaysia. Tiga serunding komersial telah disediakan dengan menggunakan otot Semitendenous. (ST; Round) dari tiga jenis sampel yang diambil dari pasar segar dan dianalisis untuk menentukan ciri-ciri fizikal, komposisi kimia, pandangan histologi dan penilaian deria terhadap kedua-dua . Hasil kajian menunjukkan bahawa pH dan kelembutan serunding berada di antara 5,28-5,60, 333-350 kgf, dan serunding daging tempatan menunjukkan tahap pH iaitu 5.56 tertinggi dengan (p <0.05) dan kelembutan (345,46 kgf). Ketiga-tiga jenis serunding menunjukkan pelbagai kecerahan di antara 20.57% -21,57%, (p> 0.05) tetapi diimport serunding memberi nilai kemerahan dan peratusan pigmen kuning tertinggi iaitu 9.1% dan 11.11% dengan (p <0.05). Kelembapan hasil, lemak dan kandungan proteinnya dalam julat 11,0-13,60%, 17,30-19,30%, 26,11-31,95%. Ciri histologi daging mentah dan serunding telah dinilai oleh SEM dan hasilnya menunjukkan bahawa panjang sarcomere dan saiz diameter otot gentian mempengaruhi kelembutan daging. Penilaian

deria menunjukkan bahawa ahli-ahli panel tidak dapat membezakan ketiga-tiga jenis serunding daging dan rupanya hampir sama ($p > 0.05$). Tanpa ahli panel mengetahui sumber sampel, analisis ini mendapati ahli-ahli panel yang dipilih memilih bahawa serunding daging lembu yang diimport lebih sedap ($p < 0.05$) berbanding serunding lain.

Walau bagaimanapun, tidak terdapat perbezaan yang signifikan di antara penerimaan keseluruhan untuk serunding daging tempatan, serunding daging yang diimport dan serunding daging kerbau. Jadi, sebagai kesimpulan, daging lembu dan daging kerbau mempunyai banyak persamaan dari segi serunding daging mereka dan ciri-ciri physiochemical mentah mereka tetapi warna lemak mereka adalah jelas setanding.

CHAPTER 1

INTRODUCTION

Most of aggressive meat lovers know what the meat that they eat, but mostly people around the world ignore the type of meat and buy according to the label plastered. This same happen in beef floss industry. When a few type of meats have been cooked with the same ingredient and same way, the appearance are same mostly happen in ruminant industry.

The situation is also common in beef floss industry known as Serunding (shredded meat; beef floss) in Malaysia . According to Ogunsola and Omojola, 2008, beef floss is known by different names such as abonin Indonesia, moo yong in Thailand, mahuin Philippines, rousong in China and thitheokhotieu in Vietnam. In Nigeria, a similar product to serunding is known as dan bunama. There is lack of data on quality characteristics of commercial serunding (shredded meat; beef floss) marketed in Malaysia. The reason why this research has been conducted is to discover whether the imported beef floss is coming from carabeef which the producer claims as imported beef floss or it really coming from imported beef. So, for make it easier to differentiate, the local beef floss, imported beef floss and carabeef floss have been made. After being cooked, all meat cannot differentiate easily with our sensory weaknesses.

So, meat quality evaluation is a process that should be carried out in analyzing of physical and chemical establishing the nutritional, biological, food and culinary value. There are processed samples for determination of protein, collagen, fat, water and pH, knowing that the nutritional value is given by the expression of these parameters and the sensory characteristics are based on relationships in which they are found.

According to the Dahlan *at el.* (1988) about 50% of the local beef supply comes from buffalo meat and usually or could be mostly imported from India. In our local market, poor quality of meat especially buffalo meat will be sold with lower price compared to local beef cattle,the poor quality of meat from buffalo is coming from buffalo which are slaughtered at the end of its working life or in the emergency situation and that is why the meat appearance look-like darker in color and tough in tenderness. So, when both beef and carabeef are cooked, we cannot differentiate which one is which anymore.

Thus, in this experiment the differences between beef and carabeef, local beef floss and imported beef floss have been study and the result will be discuss in this report.

1.1 Objectives

The main objective of this project is to compare the differences between beef and carabeef in term of physical characteristics and chemical compositions.

Specifically the objectives are as follows:

i. To identify the sources of meats in making floss whether by using beef or carabeef.

ii. To differentiate between local beef floss, imported beef floss and carabeef floss in term of physical characteristic, chemical composition and their histological characteristic.

iii. To evaluate the eating quality on the local beef floss, imported beef floss and carabeef floss.

1.2 Significance of the study

This study was significant endeavor in promoting people knowing the differences between beef and carabeef. By understanding the physicochemical characteristic and histological of raw meats (beef and carabeef) in making meat floss, the consumers especially the meat lovers and meat floss lovers could know the sources of meat floss. In meat floss industry there were two type of meat floss which were local beef floss coming from local meat and imported meat floss coming from imported raw beef. The producers said, that imported meat was coming from imported beef from India and that is why imported meat floss was cheap compared to beef floss. Doesn't make sense right? Which were imported became cheaper than local. So, in this study, the imported beef was identified whether coming from beef or imported carabeef. Fat color became top priority when comparing both type of raw meats. From this study, imported beef was coming from imported carabeef and of course from India.

Hypothesis:

There were significantly difference in between beef and carabeef at $p<0.05$ in term of fat color, physical characteristics, chemical composition and histological characteristic.

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