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Владелец: Бабин Владислав Николаевич
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Кафедра ветеринарной генетики и биотехнологии

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УТВЕРЖДЕН
на заседании кафедры
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Н.Н. Кочнев
(подпись)

ФОНД ОЦЕНОЧНЫХ СРЕДСТВ

ФТД.01 Principles forming quality of meat production
Код и название учебной дисциплины (модуля)

35.03.07 Технология производства и переработки сельскохозяйственной продукции
(профиль: **Технология производства , хранения и переработки продукции животноводства**)
Код и наименование направления подготовки (специальности) с указанием уровня подготовки

Новосибирск 2022

Паспорт
фонда оценочных средств

№ п/п	Контролируемые разделы (темы) дисциплины*	Код контролируемой компетенции (или ее части)	Наименование оценочного средства
1	Introduction General characteristics of meat	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
2	Biochemistry of muscle tissue	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
3	Biochemical processes in meat after slaughter	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
4	Changes in the meat processing low temperatures	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
5	Chemical changes in meat by salting	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
6	Chemistry smoked meat	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
7	Changes in meat during thermal processing	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
8	Biochemistry of blood in the meat of various animals	УК-4, ПКВ-2	Вопросы для коллоквиума, контрольная работа
9	Зачет		Вопросы к зачету

ТЕКУЩИЙ КОНТРОЛЬ УСПЕВАЕМОСТИ

1.Описание оценочных средств по разделам (темам) дисциплины

Раздел 1. Introduction

General characteristics of meat

Вопросы для коллоквиума:

1.What are the physiological functions of muscle tissue?
2.List the chemical components included in the composition of meat.
3.What is the role of free and bound water in the composition of meat?
4.How to determine the biological value of proteins of meat (the concept of soon)?
5.Carbohydrates muscle tissue and their biological role.
6.What are the biological functions of lipids of meat?
7.What's called peroxidation destruction of lipids of meat?
8.What types of antioxidants used in the manufacture of meat and meat products, are currently being used?
9.What is the function of extractives of meat in the formation of its organoleptic properties?
10.Vitamins and enzymes meat and their importance to the human body.
11.Functions of macro - and trace elements of meat.
12.The main properties of the meat.
13. What is the general definition of meat?
14. Why is meat valuable in man's diet?
15. How can meats be classified?
16. What are the most widely consumed types of meat?
17. What is the meat-product industry concerned with?
18. What is common in nutrient composition of different meat?
19. Why is meat considered a complete source of protein?
20. What types of fat deposits are found in meat?
21. What is biological role of fatty acids found in meat?
22. What vitamins and minerals is meat reach in?
23. What is the percentage of cholesterol in meat?

Раздел 2.Biochemistry of muscle tissue

Вопросы для коллоквиума:

1.Proteins of myofibrils and their main functions.
2. Proteins sarcolemma.
3. What is the role of myoglobin in Svetovrachane raw materials and meat products?
4. Proteins of the sarcolemma
5. Difference smooth muscles skeletal.
6.The basic properties of white and red muscle fibers.
7.PSE, DFD and normal meat.
8. Color in fresh meat.
9. Factors influencing meat colour.

Раздел 3.Biochemical processes in meat after slaughter

Вопросы для коллоквиума:

1. Basic biochemical changes in meat during its rigor.post-slaughter(rigor mortis).
2. What determines water-holding capacity of meat and how it changes in the process of autolysis?
3.Maturation of the meat and its regulation.
4. What is the function of lysosomal enzymes in the animal's life and in the process of

autolysis?

5. Deep autolysis, its types.

6 How it changes the dynamics of pH during the ripening process of meat?

7. Classification of meat depending on pH (NOR,PSE,DFD).

8. Differences between aged meat from pair.

9. Evaluation stage avtomaticheskij transformations of muscular tissue by chemical autolysis.

10 Assessment of depth and character avtomaticheskij transformations meat by the methods of histological analysis.

11. Study of the effect of stage of maturity on chemical composition and functional and technological properties of meat.

12. Biochemical processes in meat pre-slaughter.

13. The tenderness of fresh meat.

14. Aging of meat to enhance tenderness.

15. Enzymes used to enhance the tenderness of meat.

Раздел 4.Changes in the meat processing low temperatures

Вопросы для коллоквиума:

1.Classification of meat depending on the temperature of cooling.

2.What type of cooling process used in technology of meat products?

3.What are the features of physical and chemical processes during freezing of raw material?

4.What is autolysis and maturation of thawed meat?

5.What is the difference frozen meat from frozen?

6.Explain the negative effect of rapid cooling of the meat.

7.What processes occur in frozen meat?

8.Changes in meat during freezing and storage.

9.Freeze-drying of meat and its importance.

10.The essence of the Ambassador, its classification.

Раздел 5.Chemical changes in meat by salting

Вопросы для коллоквиума:

1. The protein changes of meat during salting?

2. The advantages and disadvantages of different types of meat curing.

3. Changes of extractives in the process of Ambassador

4. Give the characteristic of fast salting and slow.

5. The value of organophosphorus compounds with the Ambassador.

6. The formation of a specific color during salting.

7. Features of autolysis at the Ambassador.

8. Substances-stabilizing coloration in fast and slow curing.

9. The influence of pH on the processes of hydration in the salt meat. Explain your answer.

Раздел 6.Chemistry smoked meat

Вопросы для коллоквиума:

1. The difference of biochemical parameters of smoked meat, depending on the ways temperature?

2.Classification of methods of Smoking meat.

3. The chemical composition of smoke and the significance of phenols.

4. What type of Smoking relates to environmentally and health-friendly technologies?

5. Positive effects of Smoking.

6. Negative effects of Smoking.

7. The mechanism of formation of color smoked meat products.

8.Physico-chemical and biochemical changes in meat during Smoking.

9.Biological assessment of smoked products.

Раздел 7.Changes in meat during thermal processing

Вопросы для коллоквиума:

1. List the changes that occur in muscle proteins during cooking.
2. The mechanism of formation of traditional painting in the cooking process.
3. Features of the disintegration of the components of muscle tissue under influence of high temperatures.
4. Classification of methods of thermal processing of meat raw materials.
5. Which indicators of meat affects thermodenaturation proteins.
6. The effect of cooking on the status and properties of collagen.
7. What kind of heat treatment of meat is from a biochemical point of view more functional for human health? Justify.
8. The essence of the reaction of Maillard.

Раздел 8.Biochemistry of blood in the meat of various animals

Вопросы для коллоквиума:

1. Main biochemical functions of blood.
2. Fractional composition of blood.
3. Physico-chemical properties of blood.
4. The usefulness of blood proteins (give a description).
5. The main proteins of blood plasma.
6. Cells included in the blood and what is their value?
7. Methods for processing blood.
8. The difference from stabilized blood defibrinated.
9 Explain the process of defibrinate blood.
10. Hemolysis of blood and the factors of its cause.
11. The process of blood clotting.
12. For what purpose carry out the coagulation of blood?
13. What is discoloration of blood (what are the main methods of this process).
14. What technical products are produced from the blood of slaughtered animals?
15. What is the essence of separation of blood?
16. Name technology of using blood.

Критерии оценки вопросов для коллоквиума:

«Зачтено» – ставится в том случае, когда студент обнаруживает знание программного материала по дисциплине, допускает несущественные погрешности в ответе. Ответ самостоятелен, логически выстроен. Основные понятия употреблены правильно.

«Незачтено» – ставится в том случае, когда студент демонстрирует пробелы в знаниях основного учебного материала по дисциплине, обнаруживает непонимание основного содержания теоретического материала или допускает ряд существенных ошибок и не может их исправить при наводящих вопросах преподавателя, затрудняется в ответах на вопросы. Ответ носит поверхностный характер; наблюдаются неточности в использовании научной терминологии.

Критерии оценки результатов тестирования:

– оценка «отлично» выставляется студенту, если процент правильных ответов составляет 80-100%;

– оценка «хорошо» – 70-79%;

– оценка «удовлетворительно» – 60-69%;

– оценка «неудовлетворительно» – менее 60%.

ПРОМЕЖУТОЧНАЯ АТТЕСТАЦИЯ
Список вопросов для подготовки к зачету

1. Meat, its classification and nutritional value.
2. Fat meat, their classification and significance.
3. The state of water in meat and its value.
4. Biological value of meat proteins (chemical and biological methods).
5. Effect of organic and inorganic nitrogen-free extractives on taste, texture and color of meat.
6. Nitrogenous extractives of meat.
7. Features of triglyceride fatty acid composition of fat tissue of various species of farm animals.
8. Lipid metabolism in farm animals, their causes and effects on lipid composition and quality of meat and meat products.
9. Fat-soluble vitamins, the factors determining their content in meat and meat products.
10. Enzymes of meat.
11. Inorganic cations and anions, of meat, their biochemical functions.
12. The main properties of meat.
13. Characteristics and structure of muscles.
14. Varieties of muscle tissue. Biochemical differences in the composition and functions of smooth and skeletal muscle.
15. Biochemical factors regulating the function of providing and contractile proteins.
16. White and red muscle fibers, and value differences.
17. Sarcoplasmic proteins and their significance.
18. The proteins of myofibrils and their significance.
19. Sarcolemma proteins (stroma) and their significance.
20. Involvement of connective tissue proteins in the dynamics of the physical properties of meat during storage.
21. Pathological conditions associated with disruption of the structure of connective tissue proteins and factors causing them.
22. Proteoglycans: hyaluronic acid, chondroitin sulfate, keratinsulfaty.
23. Functions and properties of proteoglycans and biochemical factors involved in their regulation.
24. The dependence of the meat of the content and status of proteoglycans.
25. Age-related changes in the molecular structure of connective tissue proteins. The influence of endocrine factors.
26. Slaughtering of animals. Types of slaughter (normal, halal and kashirny).
27. Stiffening carcass and its value.
28. Classification of meat according to the pH values after slaughter.
29. The enzymes of glycogenolysis.
30. Interaction of contractile proteins during rigor and relaxation of muscles after slaughter.
31. The participation of energy-rich nucleotides, calcium ions and adenosine triphosphatase in sarcoplasmic retikuloma mortis and subsequent relaxation of the muscles.
32. Nucleotides are the meat and how these transformations. Participation of nitrogenous extractives in the formation of taste of meat.
33. Maturation of meat and its value.
34. Myoglobin and its derivatives.
35. Factors determining the content and the ratio of the concentration of glycogen, glucose and lactic acid in meat.
36. Deep autolysis of meat
37. The blood of farm animals and its use.
38. Composition and properties of blood.

39. Stabilization and defibrinirovanie blood.
40. Separation of blood.
41. Coagulation precipitation of blood proteins.
42. Discoloration of the blood.
43. Classification of meat at the "cold processing".
44. Changing the properties of meat and meat products during cooling.
45. Differences between podmorazhivaniem and freezing of meat.
46. Types of salted meat, and their difference.
47. Physico-chemical changes of proteins in salting meat.
48. Physico-chemical changes of extractives in salting meat.
49. Changing the process of autolysis in the salting of meat.
50. The formation of a specific color for salting meat and its stabilization.
51. Effect of different modes of smoking on biochemical status and quality of meat.
52. The chemical composition of flue smoke and its value.
53. Smokeless smoking and its value.
54. Positive and negative effects of smoked meat.
55. The formation of color when smoked meat.
56. Physico-chemical and biochemical changes in meat during smoking.
57. Biological evaluation of smoked products.
58. Classification of methods of thermal processing of raw meat.
59. Surface heat treatment of meat and its value.
60. Heating of the entire depth of the product and its value.
61. Characteristic changes of raw meat, caused by humid heating at moderate temperatures.
62. Effect of cooking on the state and properties of collagen, muscle tissue.
63. Differences pasteurization and sterilization of meat products.
64. The contractile proteins of muscle fibers - myosin, actin, tropomyosin, troponin, - their composition, structure and function of the muscle fiber filaments, sarcolemma and Z-plates.
65. Features of the amino acid composition of proteins of muscle fibers.

Критерии оценки

– отметка «отлично» выставляется студенту, если он глубоко и прочно усвоил программный материал, исчерпывающе, последовательно, четко и логически стройно его излагает, умеет тесно увязывать теорию с практикой, свободно справляется с задачами, вопросами и другими видами применения знаний, причем не затрудняется с ответом при видоизменении заданий, использует в ответе материал монографической литературы, правильно обосновывает принятое решение, владеет разносторонними навыками и приемами выполнения практических задач.

– отметка «хорошо» выставляется студенту, если он твердо знает материал, грамотно и по существу излагает его, не допуская существенных неточностей в ответе на вопрос, правильно применяет теоретические положения при решении практических вопросов и задач, владеет необходимыми навыками и приемами их выполнения.

– отметка «удовлетворительно» выставляется обучающемуся, если он имеет знания только основного материала, но не усвоил его деталей, демонстрирует недостаточно систематизированы теоретические знания программного материала, допускает неточности, недостаточно правильные формулировки, нарушения логической последовательности в изложении программного материала, испытывает затруднения при выполнении практических работ.

– отметка «неудовлетворительно» выставляется обучающемуся, который не знает значительной части программного материала, допускает существенные ошибки при его изложении, неуверенно, с большими затруднениями выполняет практические работы.

ЗАДАНИЯ
ДЛЯ ОЦЕНКИ УРОВНЯ СФОРМИРОВАННОСТИ КОМПЕТЕНЦИИ
Задания для оценки сформированности компетенции «УК-4»
Задания закрытого типа:

1. In which animals muscle fibers are thinner?
A) sheep;
B) cattle;
C) pigs;
D) horses.
Ответ:A
2. Name proteins included in the sarcoplasm.
A) collagen;
B) myogen;
C) elastin;
D) myoglobin;
E) globulin "x";
F) myosin;
G) myalbums.
Ответ:B,D,E,G
3. What proteins are myofibrillar:
A) myosin;
B) myogen;
C) actin;
D) tropomyosin;
E) globulin "x";
F) troponin;
G) actomyosin.
Ответ:A,C,D,F,G
4. Which muscles' protein has adenosinetriphosphatase activity?
A) collagen;
B) myogen;
C) elastin;
D) myoglobin;
E) globulin "x";
F) myosin;
G) myalbums.
Ответ:F
5. Name the proteins of the sarcolemma.
A) collagen;
B) myogen;
C) elastin;
D) myoglobin;
E) globulin "x";
F) reticulin;
G) myalbums.
Ответ:A,C,F
6. The main components in forming the taste and flavor of meat are :
A) proteins;
B) lipids;
C) carbohydrates;

D) amino acids;
E) amides.

Ответ:D,E

7. Mark components which compose animals blood :
A) proteins;
B) red blood cells;
C) leukocytes;
D) a serum;
E) plasma;
F) platelets.

Ответ:B,C,E,F

8. In which tissue NaCl ions penetrate faster by salting meat:
A) in muscle;
B) connective;
C) fat;
D) in bone.

Ответ:A

9. The formation of aroma and taste of smoked meat due to the presence of the following substances:
A) proteins;
B) polycyclic aromatic hydrocarbons (PAHs);
C) phenolic components;
D) carbon dioxide;
E) lipids.

Ответ:C

10. The changes in proteins during heat treatment of meat:
A) units are hydrolyzed;
B) precipitate;
C) swell;
D) denature.

Ответ:D

Задания открытого типа:

1.All parts of .....fit for cooking are considered meat.

Ответ: a carcass

2.Head, tongue, brain, …… …….(heart, liver, and kidneys), limbs (fore ones up to a wrist joint and rear ones up to a hock joint) are called offal.

Ответ: internal organs

3.Nutritional value of meat is primarily determined by the content of biologically valuable and easily digestible.....

Ответ: proteins

4.Depending on an animal species meat is differentiated for beef, veal,....., venison, mutton, etc.

Ответ: pork

5.Depending on the source and quality, fats are divided into .....and technical.

Ответ:food

6.....fats are the products of rendering, extraction or pressing of fat-containing raw material of slaughtered animals.

Ответ: Technical

7.Veal is meat of .....slaughtered between 3 and 14 weeks, delicate in flavour, pale grayish white in colour, firm and fine-grained, with velvety texture.

Ответ: calves

8. Lamb is live ……. before the age of one year, and the flesh of such animals.

Ответ: sheep

9. Mutton refers to the flesh of the mature ..... or ewe at least one year old; the meat of sheep between 12 and 20 months old may be called yearling mutton.

Ответ: ram

10. The second most common method of meat ..... is canning.

Ответ:preservation.

Задания для оценки сформированности компетенции «ПКВ-2»

Задания закрытого типа:

1. The ratio of which amino acids showed the presence of complete and incomplete proteins in meat?

A) tryptophan/lysine;
B) tryptophan/Proline;
C) the tyrosine/methionine;
D) the phenylalanine/cystine;
E) *the tryptophan/hydroxyproline*.

Ответ:E

2. Which method of treatment can be used to transform meats' collagen into gluten?

A) freezing;
B) brine treatment;
C) smoke treatment;
G) termal treatment .

Ответ:G

3. What blood product is Hematogen?

A) food;
B) medical;
C) feed;
D) technical.

Ответ:A

4. What protein causes the natural color of muscle tissue?

A) collagen;
B) myogen;
C) elastin;
D) myoglobin;
E) globulin "x";
F) myosin;
G) myalbums.

Ответ:D

5. The faster rigor occurs:

A) the carcasses with well-developed muscles;
B) the carcasses with undeveloped muscles;
C) in healthy animals after slaughter;
D) from infected animals after slaughter.

Ответ:A

6. The enzymatic degradation of glycogen in muscle tissue contributes to the accumulation of lactic acid and pH offset:

A) in the acidic side at 5.8 to 5.4;
B) to the alkaline side of 7.4 to 7.6;
C) in the neutral of 7.0.

Ответ:A

7. The best kind of raw material for the production of natural semi-finished products acquires:
A) meat extract 5 period...7 days;
B) meat with the holding period 7 to 10 days;
C) meat with the holding period of 10-14 days.

Ответ:A

8. The maximum reduction in the solubility of myofibrillar proteins observed:
A) in fresh-killed meat;
B) in meat during post-mortem;
C) in the meat during the resolution of rigor mortis;
D) during maturation of meat;
E) with deep autolysis of meat.

Ответ:B

9. What is the name of meat after cutting carcasses, characterized by the elasticity of muscles, the unmoisten surface with drying crust, and temperature is 0. to + 4°C:
A) fresh meat;
B) the cooled meat;
C) chilled meat;
D) frozen meat;
E) frozen meat;
F) defrosted meat.

Ответ:C

10. What substances are used to stabilize the pink-red color in salted meat:
A) nitrates;
B) a nitrite;
C) salts of ascorbic acid;
D) glucose;
E) sucrose.

Ответ:C,D,E

Задания открытого типа:

1. Chemical methods rely upon comparing the data on the determined amino acid composition of the product examined with the so-called ideal scales of amino acids, corresponding to completely balanced amino acid composition of a ……. ……...

Ответ: hypothetical protein

2.The ratio of tryptophan to..... decreases with the increasing content of connective tissue in meat proteins and consequently, decreasing nutritional value of meat.

Ответ: hydroxyproline

3.The optimum ratio of fat and protein in meat products is to be……..

Ответ: 1:1

4. Hydrogen ions concentration (pH) in meat depends on the content of..... in muscles at slaughter.

Ответ: glycogen

5. All biochemical processes occurring in the meat after slaughtering an animal are conventionally divided into three successive phases:……. ……..., maturation and deep autolysis.

Ответ: rigor mortis

6. WHC (water holding capacity) is a key…… …….. of meat that influences the output of ready products and closely related to juiciness, tenderness and other indexes characterizing the meat in terms of technological and cooking properties.

Ответ: quality indicator

7.Meat is differentiated into 2 types: with high terminal pH (DFD - dark, firm and dry) and

exudative meat (PSE - pale, soft and exudative) with ……. content of hydrogen ions

Ответ: low

8.Actomyosin complex formation encourages reduction of hydrophilic centers in protein molecules resulting from mutual …….. of their active groups.

Ответ: blocking

9.Autolytic process after animal life ceases to be (after rigor mortis resolution) is called meat……., it ends up with meat acquired tenderness, juiciness, specific pleasant flavor and odor.

Ответ: maturation

10. Meat…….. is decomposition of meat organic matters exposed to microflora enzymes. Herewith, proteins degrade; putrescin, mercaptans, cadaverine, indole, skatole, phenols, ammonia and others are formed.

Ответ: rotting.

Условия и критерии выставления оценок по дисциплине "Principles forming quality of meat production":

Для успешного получения знаний и умений по дисциплине Principles forming quality of meat production: необходимо посещение лекций и практических занятий, обязательное участие в аттестационных испытаниях. Для успешной работы в течение семестра бакалавр должен работать с предлагаемой литературой, активно участвовать в обсуждении материала, уметь излагать основные положения изученных источников литературы.

Зачтено выставляется если студент:

– способен охарактеризовать современное состояние и перспективы развития Principles forming quality of meat production;

– усвоил основные методы, используемые Principles forming quality of meat production;

– может охарактеризовать, раскрывать сущность биохимических явлений, пользуясь принятой научной терминологией в области биохимии мяса, четко осмысливает и выстраивает связи между различными биохимическими понятиями;

– изучил химический состав мяса;

– знает терминологию и основные понятия Principles forming quality of meat production, сущность биохимических явлений;

– освоил методы оценки качества мяса;

– активно демонстрирует понимание биохимических процессов в мясе в процессе получения, хранения и переработки;

– имеет представления о современных лабораторных методах биохимии мяса.

МАТРИЦА СООТВЕТСТВИЯ КРИТЕРИЕВ ОЦЕНКИ УРОВНЮ СФОРМИРОВАННОСТИ КОМПЕТЕНЦИЙ

Критерии оценки	Уровень сформированности компетенций
Оценка по пятибалльной системе	
«Отлично»	*«Высокий уровень»*
«Хорошо»	*«Повышенный уровень»*
«Удовлетворительно»	*«Пороговый уровень»*
«Неудовлетворительно»	*«Не достаточный»*
Оценка по системе «зачет – незачет»	
«Зачтено»	*«Достаточный»*
«Не зачтено»	*«Не достаточный»*

Методические материалы, определяющие процедуру оценивания знаний, умений, навыков и (или) опыта деятельности, характеризующих этапы формирования компетенций

1. Положение «О балльно-рейтинговой системе аттестации студентов»: СМК ПНД 08-01-2022, введено приказом от 28.09.2011 №371-О (http://nsau.edu.ru/file/403: режим доступа свободный);

2. Положение «О проведении текущего контроля и промежуточной аттестации обучающихся в ФГБОУ ВО Новосибирский ГАУ»: СМК ПНД 77-01-2022, введено в действие приказом от 03.08.2015 №268а-О (http://nsau.edu.ru/file/104821: режим доступа свободный);

Составитель _____ О.С. Короткевич
(подпись)