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EAST AFRICAN STANDARD

Chicken essence — Specification

EAST AFRICAN COMMUNITY

Draft for comments only — Not to be cited as East African Standard

Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to meet the above objectives, the EAC Partner States have enacted an East African Standardization, Quality Assurance, Metrology and Test Act, 2006 (EAC SQMT Act, 2006) to make provisions for ensuring standardization, quality assurance, metrology and testing of products produced or originating in a third country and traded in the Community in order to facilitate industrial development and trade as well as helping to protect the health and safety of society and the environment in the Community.

East African Standards are formulated in accordance with the procedures established by the East African Standards Committee. The East African Standards Committee is established under the provisions of Article 4 of the EAC SQMT Act, 2006. The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

Article 15(1) of the EAC SQMT Act, 2006 provides that "Within six months of the declaration of an East African Standard, the Partner States shall adopt, without deviation from the approved text of the standard, the East African Standard as a national standard and withdraw any existing national standard with similar scope and purpose".

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Introduction

Chicken essence is prepared from whole dressed chickens by partial hydrolysis along with the boiled water extract and concentrated under vacuum. The concentrated extract is further sterilized and the fat, if any, is removed. The concentrate is further processed and clarified to meet the prescribed requirements of nitrogen, total solids, etc. The required sweetening and flavouring agents are added and the product is packed in hermetically sealed ampoules.

The demand for chicken essence is increasing considerably both from the civilian population and from the defence personnel. This standard is being formulated in order to ensure that the production of chicken essence is up to a quality level that is acceptable to the consumers and feasible for the manufacturers.

In the preparation of this East African Standard, the following sources were consulted extensively:

IS 5558:1970(R2000), *Specification for Chicken Essence*

Codex Alimentarius website: http://www.codexalimentarius.net/mrls/vetdrugs/jsp/vetd_q-e.jsp

USDA Foreign Agricultural Service website: <http://www.mrlatabase.com>

USDA Agricultural Marketing Service website: <http://www.ams.usda.gov/AMSV1.0/Standards>

European Union: http://ec.europa.eu/enterprise/sectors/pharmaceuticals/veterinary-use/maximum-residue-limits/index_en.htm

Assistance derived from these sources is hereby acknowledged.

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Chicken essence — Specification

1 Scope

This East African Standard specifies the requirements and the methods of sampling and test for chicken essence.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AOAC Official Method 931.06:1931, *Phosphorus (Total) (P_2O_5) in Eggs*

CAC/RCP 1, *Recommended international code of practice — General principles of food hygiene*

EAS 35, *Edible salt — Specification*

EAS 12, *Drinking (potable water) — Specification*

EAS 38, *Labelling of prepackaged foods — Specification*

EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

EAS 41, *Fruits, vegetables and derived products — Sampling and methods of test*

EAS 103, *Schedule for permitted food additives*

EAS 123, *Distilled water — Specification*

ISO 936, *Meat and meat products — Determination of total ash*

ISO 1736, *Dried milk and dried milk products — Determination of fat content — Gravimetric method (Reference method)*

ISO 1737, *Evaporated milk and sweetened condensed milk — Determination of fat content — Gravimetric method (Reference method)*

ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*

ISO 4832, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms — Colony-count technique*

ISO 4833, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of microorganisms — Colony-count technique at 30 degrees C*

ISO 5537, *Dried milk — Determination of moisture content (Reference method)*

ISO 5985, *Animal feeding stuffs — Determination of ash insoluble in hydrochloric acid*

ISO 6491, *Animal feeding stuffs — Determination of phosphorus content — Spectrometric method*

ISO 6579, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection of *Salmonella* spp.*

ISO 8156, *Dried milk and dried milk products — Determination of insolubility index*

ISO 9390, *Water quality — Determination of borate — Spectrometric method using azomethine-H*

ISO 13730, *Meat and meat products — Determination of total phosphorus content — Spectrometric method*

ISO 21527-1, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 1: Colony count technique in products with water activity greater than 0.95*

ISO 21527-2, *Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95*

3 Definitions

For the purpose of this standard the following definition shall apply:

chicken essence

a liquid extract containing the hydrosoluble extractives of chicken flesh and free from any preservative, added gelatin and micro-organisms

4 Requirements

4.1 Hygienic requirements

The material shall be prepared and handled under strict hygienic conditions by persons free from contagious and infectious diseases and only in premises maintained in a thoroughly clean and hygienic condition and having adequate and safe water supply (see EAS 39) and duly approved and licensed by the public health authorities concerned. All workers shall use clean and washed clothings. Necessary precautions shall be taken to prevent incidental contamination of the product from soiled equipment or from personnel suffering from injuries.

4.1.1 All equipment coming in contact with raw materials or products in the course of manufacture shall be kept clean. An ample supply of steam and water, hose, brushes and other equipment, necessary for proper cleaning of machinery and equipment shall be available. The equipment may be sterilized by immersion in or swabbing with hypochlorite or other chlorine solution.

4.1.2 Quality of water used for processing shall conform to EAS 12.

4.2 Processing requirements

Healthy chickens shall be dressed, extracted with hot distilled water, concentrated to desired volume, clarified properly after rendering it fat-free, adjusted to proper solid and nitrogen content, filtered, filled in clean ampoules, sealed and sterilized.

4.3 Finished product requirements

4.3.1 Physical requirements

The finished product shall be clear and without any sediment. It shall have a characteristic taste and odour of chicken essence. The setting time at -10 °C shall not be more than 1½ hours when tested by the method given in Annex A.

4.3.2 The product shall also comply with the chemical and microbiological requirements given in Table 1.

Table 1 — Requirements for chicken essence

S/No.	Characteristic	Requirement	Method of test
(1)	(2)	(3)	(4)
i)	Total solids, percent by weight	10 to 12	B
ii)	Protein content, percent by weight	8 to 10	C
iii)	Chloride content, percent by weight	0.15 to 0.20	D
iv)	pH	5.8 to 6.2	E
v)	Sterility test	To pass the test	F

5 Packing and marking

5.1 Packing

5.1.1 The material shall be packed in hermetically sealed ampoules.

5.1.2 The ampoules shall be packed in suitable cartons. The number of ampoules in each carton shall be subject to agreement between the purchaser and the vendor.

5.2 Marking

The ampoules shall be marked by labelling on the containers themselves or as agreed to between the purchaser and the vendor. The marking or the label shall give the following information:

- a) Name of the material along with brand name, if any;
- b) Name and address of the manufacturer;
- c) Net weight of the contents;
- d) Batch number in code;
- e) Names of the ingredients; and
- f) Licence number given by the health authorities.

5.2.1 Each container may also be marked with a Certification Mark.

6 Sampling

The method of drawing representative samples of the material and the criteria for conformity shall be as described in Annex G.

7 Tests

7.1 Tests shall be carried out as prescribed in the appropriate appendices given under col4 of Table 1.

7.2 **Quality of reagents** — Unless specified otherwise, pure chemicals shall be employed in tests and distilled water complying with EAS 123 shall be used where the use of water as a reagent is intended.

NOTE Pure chemicals shall mean chemicals that do not contain impurities which affect the results of analysis.

Annex A
(normative)

Determination setting

A.1 Apparatus

A.1.1 Bath — made of suitable material for holding ice-salt freezing mixture.

A.1.2 Thermometer — calibrated 10 °C to 110 °C.

A.1.3 Watch

A.2 Procedure

A.2.1 Break the ice into pieces and mix common salt with it, and place it in the tub. Maintain the temperature of ice-salt mixture at below -10 °C. Place 5 ampoules in the bath and note the time. Also note the time separately when the contents of each of 5 ampoules form a jelly.

The ampoules should form a transparent solid jelly without any separation of solids or appearance of turbidity.

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Annex B
(normative)

Determination of total solids

B.1 Apparatus

B.1.1 Flat-bottom dishes — of nickel or other suitable material and with cover. Dishes should not be affected by boiling water. They may be 7 to 8 cm in diameter and not more than 2.5 cm deep. They should be provided with short glass stirring rods having a widening flat end.

B.1.2 Well-ventilated oven — maintained at $100^{\circ} \pm 2^{\circ}\text{C}$.

B.2 Procedure

Weigh accurately about 5 g of the sample into a flat-bottom glass or china or aluminium dish (with a cover) previously dried and weighed. Heat the dish containing the material after uncovering in an oven maintained at $100^{\circ} \pm 2^{\circ}\text{C}$ for about 5 hours. Cool in a desiccator and weigh with the cover on. Repeat the process of drying, cooling and weighing at half-hourly intervals, until the difference between two consecutive weighings is less than 2 mg. Record the lowest weight.

B.3 Calculation

$$\text{Total solids, percent by weight} = \frac{100(W_2 - W)}{(W_1 - W)}$$

where

W_2 = weight in g of dried sample with the dish,

W = weight in g of empty dish, and

W_1 = weight in g of sample with the dish.

Annex C
(normative)**Determination of protein****C.1 Kjeldahl method**

C.1.1 Apparatus — A recommended apparatus, as assembled, is shown in Figure 1. The apparatus consists of a round-bottom flask A of 1000 ml capacity fitted with a rubber stopper through which passes one end of the connecting bulb tube B. The other end of the bulb tube B is connected to the condenser C which is attached by means of a rubber tube to a dip tube D which dips into the liquid contained in beaker E of 250 ml capacity.

C.1.2 Reagents

C.1.2.1 Concentrated sulfuric acid — sp gr 1.84.

C.1.2.2 Copper Sulfate

C.1.2.3 Potassium sulfate or anhydrous sodium sulfate — nitrogen-free.

C.1.2.4 Sodium hydroxide solution — Dissolve about 225 g of sodium hydroxide in 500 ml of water.

C.1.2.5 Standard sodium hydroxide — approximately 0.1 N.

C.1.2.6 Standard sulfuric acid — approximately 0.1 N.

C.1.2.7 Methyl red indicator — Dissolve 1 g of methyl red in 200 ml of rectified spirit, 95 percent (v/v).

C.1.3 Procedure — Transfer carefully about 0.5 g of accurately weighed material to the Kjeldahl flask. Add 25 ml of concentrated sulfuric acid through the neck of the flask so that it washes the material, if any, sticking to the sides of the flask. Add about 0.2 g of copper sulfate into the flask. Place the flask in an inclined position. Heat below the boiling point of the acid until frothing ceases. Add about 10 g of potassium sulfate. Increase heat until it boils vigorously and digest for 30 minutes after the mixture becomes clear and pale green or colourless. Wash down particles, if any, sticking to the sides with the minimum quantity of concentrated sulfuric acid and continue digestion for 60 to 90 minutes. Cool the contents of the flask. Transfer quantitatively to the round-bottom flask A and dilute to 250 ml. Add with shaking a few pieces of pumice stones to prevent bumping.

Add about 50 ml of sodium hydroxide solution or more (which is sufficient to make the solution alkaline) carefully through the side of the flask, so that it does not mix at once with the acid solution but forms a layer below it. Assemble the apparatus as shown in Figure 1, taking care that the tip of the condenser extends below the surface of a known quantity of standard sulfuric acid contained in the beaker E. Mix the contents of the flask by shaking and distil until all ammonia has passed over into the standard sulfuric acid. Detach flask A from the condenser and shut off the burner. Rinse the condenser thoroughly with water into the beaker E. Wash the dip tube D carefully so that all traces of condensate are transferred to the beaker. When all the washings have drained into the beaker E, add two or three drops of methyl red indicator and titrate with standard sodium hydroxide solution.

C.1.3.1 Carry out a blank using all reagents in the same quantities and with 0.5 g of sucrose in place of the material.

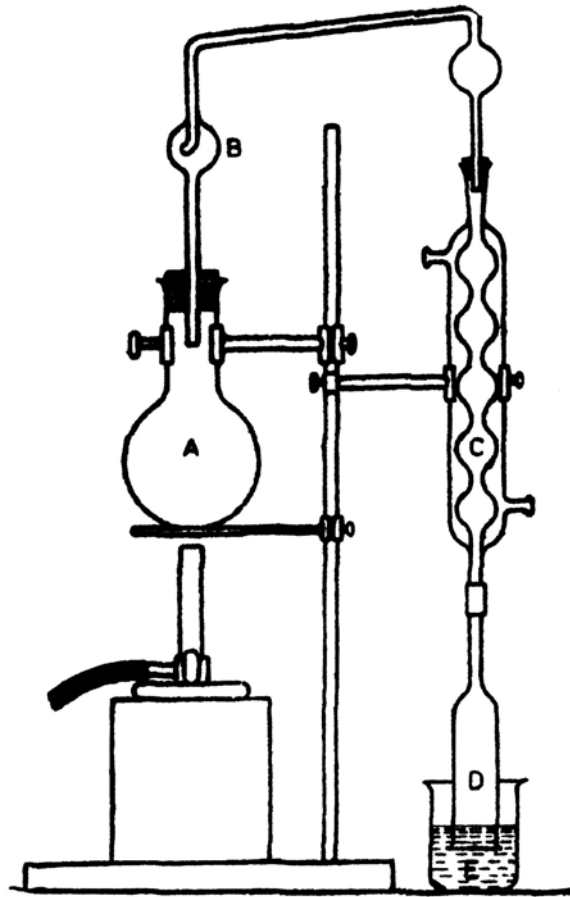


Figure 1 — Apparatus for the determination of protein

C.1.4 Calculation — Protein is calculated by multiplying nitrogen content by the factor 6.68, as follows:

$$\text{Protein, percent by weight} = \frac{0.014(B - A)N}{W} \times 100 \times 6.68$$

where

B = volume in ml of standard sodium hydroxide solution used to neutralize the acid in the blank determination,

A = volume in ml of standard sodium hydroxide solution used to neutralize the excess of acid in the test with the material,

N = normality of standard sodium hydroxide solution, and

W = weight in g of the material taken for the test.

Annex D
(normative)

Determination of chloride content

D.1 Reagents

D.1.1 Silver nitrate solution — approximately 0.05 N.

D.1.2 Concentrated nitric acid — sp gr 1.42.

D.1.3 Standard potassium thiocyanate solution — 0.05 N, standardized against standard potassium chloride or sodium chloride.

D.1.4 Saturated iron alum solution — in 10 percent nitric acid, prepared by boiling excess of iron alum, cooling and filtering.

D.2 Procedure

D.2.1 Place 1 g of the prepared sample, accurately weighed in a 250-ml Erlenmeyer flask. Mix with it 10 ml of silver nitrate solution. Add 10 ml of concentrated nitric acid and digest the whole until reddish brown fumes are evolved. Add one millilitre of saturated iron alum solution. Determine the excess of silver nitrate by titrating with the standard potassium thiocyanate solution, until the first appearance of an orange tint that persists for 15 seconds.

D.2.2 In the same manner, determine the volume of the standard thiocyanate solution equivalent to 10 ml of silver nitrate using the same volumes of reagents and water.

D.3 Calculation

Chlorine, percent by weight = $0.01773(B - A)$

where

B = volume in ml of the standard potassium thiocyanate solution required by the blank, and

A = volume in ml of the standard potassium thiocyanate solution required by the sample.

Annex E
(normative)

Determination of pH

E.1 Electrometric method

E.1.1 Apparatus

E.1.1.1 pH Meter

E.1.2 Reagents

E.1.2.1 Standard potassium hydrogen phthalate buffer (pH 4.0) — Dissolve 10.12 g of dried potassium hydrogen phthalate in water and dilute to 1 litre.

E.1.3 Procedure — Determine pH of the sample, using glass-calomel electrode system. Follow instructions issued by manufacturer of potentiometer used. Check pH meter before and after use against standard potassium hydrogen phthalate buffer. Report the results to nearest 0.05 pH.

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Annex F (normative)

Test for sterility

F.1 Principle

F.1.1 Tests for sterility are based upon the principle that if bacteria are placed in a medium which provides nutritive material and water, and kept at a favourable temperature, the organisms will grow, and their presence will be indicated by a turbidity in the originally clear medium.

F.1.2 General

The test for sterility comprises: (a) detection of aerobic and anaerobic organisms; and (b) detection of fungi.

F.2 Detection of aerobic and anaerobic organisms

F.2.1 Reagents

F.2.1.1 Medium for aerobic organisms — The medium either consists of meat extract containing a suitable concentration of peptone or is prepared by the enzymic digestion of protein material. After the final sterilization, the alkalinity of the medium lies between the limits represented by pH 7.2 and pH 7.8, except where otherwise stated.

F.2.1.2 Medium for Anaerobic Organisms — The medium is similar to that for aerobic organisms, with the addition of either (a) sufficient heat-coagulated muscle to occupy a depth of at least 1 cm at the bottom of the container, or (b) about 0.05 percent of agar together with other suitable substance which may decrease the oxidation-reduction potential of the final medium sufficiently to permit the growth of obligate anaerobic organisms, an oxidation-reduction potential indicator such as resazurin sodium may be added. After final sterilization, the alkalinity of the medium lies between the limits represented by pH 7.2 and pH 7.8. Before the sample to be tested is added, the medium is heated at 100°C for sufficient time to free it from dissolved oxygen, and cooled.

F.2.2 Procedure — Inoculate 100 mg of media for aerobic organisms and for anaerobic organisms with 2 ml of the contents of each sealed container to be tested. Incubate the inoculated media between 30 °C and 32 °C for seven days. The product shall pass the test if a growth of micro-organisms does not occur in any tube before the end of seven days. If growth occurs, fresh material may be taken and the test repeated, and, if necessary, this may be done a third time. The product shall fail to pass tests if growth occurs in each of the three tests, or if a growth of the same organisms occurs in more than one test.

F.3 Detection of fungi

F.3.1 Reagents

F.3.1.1 Fluid sabouraud medium

Dextrose	20 g
Pancreatic digest of casein	5 g
Peptic digest of animal tissue	5 g
Water	1 000 ml

Dissolve the dextrose, the pancreatic digest of casein, and the peptic digest of animal tissue in the water with the aid of gentle heat. Adjust the medium with 1 N sodium hydroxide solution so that, after sterilization, it will have a pH of 5.7 + 0.1. Filter, if necessary; place in culture tubes, and sterilize at 121 °C for 20 minutes. The autoclave temperature should be reached within ten minutes.

F.3.2 Procedure — Inoculate 15 ml of sabouraud medium with 1 ml of the contents of each sealed container to be tested. Incubate the inoculated medium between 22° to 25 °C for not less than ten days. When the material to be tested renders the medium turbid so that it is not possible to determine the presence or absence of growth readily by visual examination, transfer suitable portions of this turbid medium between the third and seventh days after the test is started. Incubate both the original and transfer tubes for seven to eleven days. Examine all tubes during and at the end of the incubation period. When evidence of growth is observed within two days, check the tubes showing such evidence by microscopic examination of stained smears or by transferring to a suitable medium. If on the first test no growth is found the material under examination meets the requirements of the absence of contamination with fungi. If growth is found, the test may be repeated to rule out laboratory contamination which may be introduced during the test, using twice the number of samples. If repeated tests confirm the presence of contamination due to fungi, the sample shall fail to pass the test.

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Annex G (normative)

Sampling of chicken essence

G.1 General requirements

G.1.0 In drawing, preparing, storing and handling the samples, the following precautions and directions shall be observed.

G.1.1 The sampling instrument shall be sterile, clean and dry when used.

G.1.2 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers from adventitious contamination.

G.2 Scale of sampling

G.2.1 Lot — In any consignment, all the containers of the same size and from the same batch of manufacture shall be grouped together to constitute a lot.

G.2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material to the requirements of this standard.

G.2.2 The number of containers to be selected from the lot shall depend on the size of the lot and shall be as given in Table 2.

Table 2 — Scale of sampling

Number of ampoules in the lot	Number of ampoules to be selected
N	n
(1)	(2)
101 to 300	9
301 to 600	12
501 to 1000	15
1001 and above	21
NOTE Up to 100, the sample size may be as agreed to between the purchaser and the vendor.	

G.2.3 These containers shall be selected at random from the lot and to ensure the randomness of selection, a random number table as agreed to between the purchaser and the vendor shall be used. In case such a table is not available the following procedure shall be adopted:

Starting from any container, count them as 1,2,3, , etc, up to r in one order, where r is the integral part of N/n (N being the total number of cartons in the lot and n the number of ampoules to be chosen). Every r th container thus counted shall be separated until the requisite number of ampoules is obtained from the lot to give the samples for test.

G.2.3.1 In addition to the containers selected according to G.2.3, 6 containers shall be selected from each lot at random for bacteriological requirements.

G.3 Test sample and referee sample

G.3.1 The containers selected according to G.2.3 and G.2.3.1 shall be divided into three equal sets and labelled with all the particulars of sampling, one of these sets of samples shall be for the purchaser, another for the vendor and the third for the referee.

G.3.2 Referee sample — The referee sample consists of a set of sample containers for general and chemical tests (see G.2.3) and a set of sample containers for sterility test (see G.2.3.1). These containers shall bear the seals of the purchaser and the vendor (or their representatives) and shall be kept at a place as agreed to between the two.

G.4 Number of tests

G.4.1 Tests for general requirements, for total solids, protein and chloride shall be made on the set of individual sample containers selected according to G.2.3.

G.4.2 Coliform count test requirement shall be conducted on the individual sample containers selected according to G.2.3.1.

G.5 Criteria for conformity

G.5.1 The lot shall be decided as conforming to the specification if the test samples taken in G.4.1 and G.4.2 satisfy the corresponding requirement.

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