

COMMODITY INDICATORS OF BIOLOGICALLY ACTIVE FOOD SUPPLEMENTS OF THE GROUP «SIFAT AGRO SERVICE»

Nozimjon Tukhtaboev*; Ibrakhim Askarov**; Muydinjon Muminov***

*Associate Professor of the Department of Chemistry,
Candidate of Technical Sciences,
Andijan State University, Andijan, UZBEKISTAN
Email id: notu.nt@gmail.com

**Professor of the Department of Chemistry,
Doctor of Chemical Sciences,
Andijan State University, Andijan, UZBEKISTAN
Email id: tabobat_akademiya@mail.ru

***Associate Professor of the Department of Chemistry,
Candidate of Physical and Mathematical Sciences,
Andijan State University, Andijan, UZBEKISTAN
Email id: muminov_mm@mail.ru

DOI: 10.5958/2249-7137.2022.00325.1

ABSTRACT

The purpose of this work is to evaluate the commodity indicators of biologically active food supplements of the "SIFAT AGRO SERVIS" group from amaranth based on organoleptic, physico-chemical indicators, requirements for raw materials and materials

KEYWORDS: *Biologically Active Additives (BAA), Amaranth, Food Additives, Tablet, Capsule, Powder, Technical Requirements, Packaging, Labeling, Control Methods*

INTRODUCTION

Biologically active additives (BAA) to food of the SIFAT AGRO SERVIS group are produced in the following assortment:

- "BIODARMON" in the form of tablets, capsules and powder;
- "BIOCHAI" from amaranth in the form of tablets, capsules and powder;
- "BIOMUZHIZA" in the form of oil.

Food supplements of the "SIFAT AGRO SERVIS" group must comply with the requirements of the organization's standard, be produced according to the technological instructions and recipes in compliance with the sanitary norms and rules approved in the prescribed manner [1-5].

REQUIREMENTS FOR RAW MATERIALS AND MATERIALS

Raw materials of plant species of the flora of Uzbekistan and materials used for the production of dietary supplements for food must be approved for use by the Ministry of Health of the Republic of Uzbekistan. Input control of raw materials and materials is carried out in accordance with GOST 24297 [6].

For the production of dietary supplements for food, the following raw materials and materials are used:

- amaranth seeds - *Amaranthus* - in accordance with GOST 28636 or according to a certificate of conformity [7];
- amaranth leaves, flowers - according to the current regulatory documentation;
- chamomile - *Matricaria chamomilla* L. according to GOST 2237, FS 42 Uz-0259 or according to the certificate of conformity [8];
- peppermint - *Mentha piperita* L. according to GOST 23768, FS 42 Uz-0263 or according to certificate of conformity [9];
- leaves and flowers of safflower - in accordance with GOST 12096 or according to a certificate of conformity;
- sunflower oil - according to GOST 1129 [10];
- D₃ - according to the current ND or according to the certificate of conformity.

AUXILIARY MATERIALS

- calcium stearate according to the current normative documents or according to the certificate of conformity;
 - magnesium stearate according to the current normative documents or according to the certificate of conformity;
 - microcrystalline cellulose - purified according to the current ND or imported according to the certificate of conformity;
 - sugar according to GOST 3 1361 or according to GOST 31895 [11];
 - potato starch according to GOST 7699;
 - maltodextrin according to the current ND or according to the certificate of conformity;
 - food natural extract or flavors according to GOST 32049 or imported according to the certificate of conformity [12];
 - purified water – according to the certificate of conformity;
 - Drinking water – by O'z DST 950 [13].
 - citric acid – according to GOST 908 or according to the certificate of conformity [14];
 - sodium citrate – according to the current RD or according to the certificate of conformity;
 - potassium sorbate imported according to the certificate of conformity;
 - ethyl alcohol rectified from food raw materials according to O'z DST 3115 [15];
 - gelatin capsules – according to the current RD or according to the certificate of conformity;
 - for product packaging, packaging materials must comply with the requirements of standards approved in the prescribed manner.
-

For production, raw materials are not allowed in which the residual amount of toxic elements and microbiological indicators exceed the maximum allowable levels established by SanPiN 0283 [16].

PACKAGE

Food supplements in the form of oils are poured into vials or bottles with a screw thread on the rim with a capacity of 10,0 ml to 500,0 ml of various types: glass, glass and PET bottles according to the current regulatory documentation.

It is allowed to use other containers, in agreement with the consumer and approved for use for this product name by the Ministry healthcare of the Republic of Uzbekistan.

Bottles and vials with dietary supplements for food should be tightly closed and not leak when turned over.

It is allowed to pack vials and bottles together with instructions for use in packs of boxed cardboard according to GOST 7933, GOST 33781. The gross weight of the shipping container should not exceed 10 kg.

BAA for food in the form of powder/granules packaged with a weight of 1,0 g to 200,0 g in cardboard packs according to GOST 7933 or with a weight of 0,5 g to 10,0 g in a sachet or for racial tea leaves in imported paper bags according to a certificate of conformity, which are from 1 pc. up to 100 pcs. placed in cardboard packs according to GOST 7933 [17].

It is allowed to produce dietary supplements for food with a net weight of 1,0 g to 500,0 g in bags made of polyethylene film of basic grades in accordance with GOST 10354 [18] or cellophane film in accordance with GOST 7730 [19], approved for contact with food products.

For gluing packs and paper bags, polyvinyl acetate dispersion according to GOST 18992 [20] or imported according to the certificate of conformity should be used. Plastic bags must be glued by heat sealing, bags for racial tea leaves are glued by heat treatment. It is allowed to use self-adhesive stickers for boxes.

Dietary supplement to food in the form of capsules/tablets packaged in weight from 300,0 mg to 1000,0 mg in blister packs made of polyvinyl chloride film and aluminum varnished printed foil (blaster), approved for use by the Ministry of Health of the Republic of Uzbekistan from 1 to 30 pieces or in bottles made of polymeric materials according to the current regulatory documentation in quantities from 10 to 140 pieces. A blister and bottles in an amount of 1 to 4 pieces are placed in boxes made of boxed cardboard according to GOST 7933, GOST 33781 [21].

Packs, bags, bottles (jars) are placed in corrugated cardboard boxes in accordance with GOST 13511 [22] or imported according to a certificate of conformity. Boxes are pasted over with paper-based adhesive tape in accordance with GOST 18251 [23], or with imported adhesive tape according to the certificate of conformity.

Permissible negative mass tolerances for packaged goods must comply with requirements O'z DST 8.022 [24].

Product packaging must comply with the requirements of UzTR.476-021 [25].

MARKING

Each packaging unit - consumer packaging, must be marked in the form of a glued paper label made of label paper in accordance with GOST 7625 [26] or writing paper in accordance with GOST 18510 [27] indicating:

- name of the manufacturer, its trademark (if any), address (legal and actual) and telephone number;
- Name of production;
- compound;
- release form;
- instructions for use;
- information about contraindications;
- volume, ml (for oils);
- net weight (tablets, capsules, powder), g;
- quantity in a package, pieces;
- date of manufacture (day, month, year);
- expiration date (month, year);
- the inscription: "**BAA for food, is not a medicine**";
- storage conditions;
- designation of this standard of the organization;
- certification information;
- barcode with registration number (if necessary);
- “O'zbekistonda ishlab chiqarilgan” or “Made in Uzbekistan” when selling on the domestic market, when supplying products for export – “Made in Uzbekistan”

If all the necessary information cannot be placed on the packaging unit, it is allowed to include the missing information in the package leaflet (abstract, instructions for use).

Each package is marked with a transport marking in accordance with GOST 14192 with indication of handling signs: “Fragile. Carefully!” (for glass bottles), “Keep away from sunlight”, “Protect from moisture” [28].

For each unit of transport container in which packaged products are packed, one of the end sides of the box is marked with a stamp, stencil, labeling, containing the following information:

- name of the manufacturer, form of ownership, its trademark (if any), address (legal and actual), telephone number;
- Name of production;

- the number of packaging units, pieces;
- net weight, kg;
- date of manufacture (day, month, year);
- storage conditions;
- expiration date (year);
- certification details:
- designation of this standard of the organization;
- "O'zbekistonda ishlab chiqarilgan" or "Made in Uzbekistan" - when selling on the domestic market, when supplying products for export - "Made in Uzbekistan".

Product labeling must comply with the requirements of UzTR.490-022 [29].

According to organoleptic indicators, dietary supplements for food must meet the requirements specified in Table 1 [30].

TABLE 1. ORGANOLEPTIC INDICATORS OF DIETARY SUPPLEMENTS FOR FOOD OF THE SIFAT AGRO SERVIS GROUP

Names indicators	Characteristic			
Release form	Powder/ /granule	Pills	Capsules	Butter
Appearance	Crushed macca	In the form of a round or some other form. with/without company embossing on one side	Solid gelatin capsules of a cylindrical shape with a smooth, without surface damage, filled with crushed mass	Homogeneous transparent liquid. Slight haze allowed
Colour	From light green to Green colour	depending from the color of the components		Light yellow to brown colors
Smell and taste	Weak fragrant, slightly astringent, bitter, without foreign taste and odor with a predominance of odor composition of plants			

According to the physico-chemical parameters, dietary supplements for food in the form of granules/powder must comply with the standards specified in Table-2 [31-37].

TABLE 2. PHYSICO-CHEMICAL INDICATORS OF DIETARY SUPPLEMENTS FOR FOOD OF THE "SIFAT AGRO SERVIS" GROUP (GRANULE/POWDER)

The name of indicators	Norm
Humidity, %, no more	10.0
The content of extractives in terms of absolutely dry mass of raw materials, %, not less than	20.0
Mass field of large fraction (grinding), %, no more	5.0
Mass fraction of metal-magnetic impurity	not allowed
The content of impurities:	0.1
- mineral (earth, sand), %, no more	0.1
- organic (parts of other non-poisonous plants), % no more;	
Mass fraction of browned parts of raw materials, %, no more	4.0
The presence of mold and rot	not allowed
The presence of poisonous plants and their parts	not allowed
pest infestation	not allowed
Average weight of powder/granules in a sachet, g	from 0.5 to 200

According to the physico-chemical parameters, dietary supplements for food in the form of tablets / capsules must comply with the requirements specified in Table-3.

TABLE 3. PHYSICO-CHEMICAL INDICATORS OF DIETARY SUPPLEMENTS FOR FOOD OF THE "SIFAT AGRO SERVIS" GROUP (TABLET/CAPSULE)

The name of indicators	Norm
Average weight of capsules/tablets, g	0.3-1.0+ I 5%
Mass fraction of moisture, %, no more	9.0
Disintegration, min, no more	thirty

In terms of physicochemical and safety indicators, dietary supplements for food must meet the requirements specified in Table-4 [38-55].

TABLE 4. PHYSICAL AND CHEMICAL INDICATORS AND SAFETY INDICATORS OF DIETARY SUPPLEMENTS FOR FOOD OF THE SIFAT AGRO SERVIS GROUP

The name of indicators	Norm
Acid number. mg KOH, no more	2.25
Mass fraction of moisture and volatile substances, %, no more	0.15
Mass fraction of non-fat impurities	is absent
Peroxide number of active oxygen mmol /kg	ten
Mass fraction of unsaponifiable substances, %, no more	0.5
Toxic elements, mg/kg, not more than:	
-lead	0.1
-arsenic	0.1
-cadmium	0.05
-mercury	0.03

-iron	5.0
-copper	0.5
-zinc	5.0
Mycotoxins: aflatoxin B₁, mg/kg, no more	0.005
Pesticides:	
- Hexachlorocyclohexane (α-, β-, γ -isomers), mg/kg, not more than	0.05
-DDT and its metabolites , mg/kg, no more	0.1
Cesium-137 Bk /kg	60
Strontium-90 Bk /kg	80

The content of toxic elements, the residual amount of pesticides, radionuclides and microbiological indicators must comply with the requirements established by SanPiN 0283. Determination of the content of pesticides and mycotoxins is carried out according to the methods approved by the Ministry of Health of the Republic of Uzbekistan in the prescribed manner.

Control methods for dietary supplements for food in the form of oils, powders / granules and capsules / tablets are carried out according to regulatory and technical documents in the form of GOST, O'z DSt, GF . The quality of the packaging and the correctness of the labeling will be checked visually. It is allowed to use other control methods approved in the prescribed manner, not specified in the standard of the organization and providing reliable test results.

REFERENCES

1. GOST 12.0.004-90. CCBT. Organization of labor safety training. General specifications
2. GOST 12.1.004-91. SSBT. Fire safety. General requirements
3. GOST 12.2.003-91. SSBT. Production equipment. General safety requirements.
4. GOST I 2.3.002-75. SSBT. Manufacturing processes. General safety requirements.
5. GOST 17.4.3.05-86. Protection of Nature. Soils. Requirements for wastewater and their sludge.
6. GOST 24297-2013. Verification of purchased products. Organization and methods of control
7. GOST 24027.0-80. Medicinal vegetable raw materials. Acceptance rules and sampling methods
8. GOST 2237-93. Chamomile flowers. Specifications
9. GOST 23768-94. Peppermint leaves threshed. Specifications
10. GOST 1129-2013. Sunflower oil. Specifications
11. GOST 31895-2012. White sugar. Specifications.
12. GOST 32049-2013. Food flavorings. General specifications
13. O'zDSt 950:2011. Drinking water. Hygiene requirements and quality control

14. GOST 908-2004. Citric acid monohydrate food. Specifications
15. O'z DSt 3115:2016. Ethyl alcohol rectified from food raw materials. Specifications
16. SanPiN 0283-2010. Hygienic requirements for food safety.
17. GOST 7933-89. Cardboard for consumer packaging. General specifications
18. GOST 10354-82. The film is polyethylene. Specifications.
19. GOST 7730-89. Cellulose film. Specifications.
20. GOST 18992-97. Dispersion polyvinyl acetate homopolymer coarse. Specifications
21. GOST 33781-2016. Consumer packaging made of cardboard, paper and combined materials
General specifications
22. GOST 13511-2006. Corrugated cardboard boxes for food products, matches, tobacco
products and detergents. General specifications
23. GOST 18251-87. Adhesive tape on a paper basis. Specifications
24. O'z DSt 8.022-2002. GSI Uz. General metrological requirements for the quantity of packaged
goods in packages. any type and procedure for the implementation of state metrological
control and supervision of their compliance
25. UzTR.476-021:2017. OTP. On the safety of packaging in contact with food
26. GOST 7625-86. Label paper. Specifications.
27. GOST 18510-87. Writing paper. Specifications
28. GOST 14192-91. Cargo marking.
29. UzTR.490-022:2017. OTP. On food safety in terms of its labeling
30. GOST 6687.5-86. Non-alcoholic industry products of organoleptic indicators and production
volume.
31. GOST 15113.0-77. Food concentrates. Rules for acceptance, sampling and sample
preparation
32. GOST 15113.4-77. Food concentrates. Methods for determining moisture.
33. GOST 15113.8-77. Food concentrates. Methods for determining the zone.
34. GOST 13496.9-96. Compound feed. Methods for determining the metal-magnetic impurity
35. GOST 10444.12-88. Food products. Method for the determination of yeasts and molds
36. GOST 24027.1-80. Medicinal vegetable raw materials. Methods for determining authenticity,
infestation with granary pests, fineness and impurity content
37. GOST 29329-92. Scales for static weighing. General technical requirements
38. O'z DSt 1203:2015. Vegetable oils. Methods for determining acid number.
39. O'z DSt 1193:2014. Vegetable oils. Methods for determining moisture and volatile
substances.

40. O'z DSt 1197:2015. Vegetable oils. Methods for determination of non-fat impurities and sludge.
41. O'z DSt 1200:2015. Vegetable oils. Method for measuring peroxide value.
42. O'z DSt 1194:2014. Vegetable oils and natural fatty acids. Methods for determining the content of unsaponifiable substances.
43. GOST 26929-94. Raw materials and foodstuffs, Sample preparation. Mineralization to determine toxic elements.
44. GOST 26932-86. Raw materials and food products. Lead determination methods.
45. GOST 26930-86. Raw materials and food products. Methods for the determination of arsenic.
46. GOST 26933-86. Raw materials and food products. Methods for the determination of cadmium.
47. GOST 26927-86. Raw materials and food products. Methods for the determination of mercury.
48. GOST 26928-86. Food products. Iron determination method
49. GOST 26931-86. Raw materials and food products. Methods for determining copper
50. GOST 26934-86. Raw materials and food products. Method for determination of zinc
51. GOST 26668-85. Food and flavor products. Sampling methods for microbiological analysis
52. GOST 31904-2012. Food and flavor products. Sampling methods for microbiological testing
53. GOST 10444.15-94. Food products. Methods for determining the number of mesophilic and aerobic and facultative anaerobic microorganisms.
54. GOST 32161-2013. Food products. Method for determining the content of cesium Cs-137
55. GOST 32163-2013. Food products. Method for determining the content of strontium Sr-90