World Organisation for Animal Health

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WOAH Collaborative Centre Reports Activities 2024

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CENTRE INFORMATION

***Title of WOAH Collaborating Centre**	Food Safety in Eastern Europe, Central Asia and Transcaucasia
***Address of WOAH Collaborating Centre**	The Russian State Center for Animal Feed and Drug Standardization and Quality (FGBU VGNKI)
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***Name Director of Institute (Responsible Official):**	Evgeniy V. Antonov
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***Name of the writer:**	Olga Ivanova

TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOAH

Category	Title of activity	Scope
		In 2024, a total of 22 574 (feed + food)

Food security (true)	State monitoring of food safety	studies of chemical, microbiological safety, falsification and quality indicators were conducted in 7 331 samples. Of these, 17 794 studies were conducted on chemical indicators in food products: residues of veterinary drugs, both prohibited for use (nitrofurans, nitroimidazoles, amphenicols, sedatives, etc.) and those with acceptable levels (antibiotics: tetracyclines, penicillins, quinolones, macrolides, aminoglycosides, polypeptides, cephalosporins, NSAIDs, anthelmintics and others), as well as contaminants: toxic elements, dioxins, PCBs, etc. A total of 146 studies (0.8% of those conducted) were positive for chemical contaminants. The most frequently detected substances above the permissible limits were hydroxymethylfurfural in honey (7.7% of positive studies), toxic elements (4.7% of positive studies, mainly arsenic in fish and seafood), macrocyclic lactones (3.7%) and NSAIDs (2.2%) in meat by-products, coccidiostats (1.5%, mainly in poultry products) and nitrofurans (1.5%, mainly in meat products). 13 out of 248 (5.2%) samples of raw materials for the falsification of composition (determination of species-specific DNA) were found positive. 15 out of 160 studies (9.4%) were conducted for falsification of dairy products with vegetable fat. Violations were also detected for pesticides, tetracyclines, corticosteroids, quinolones, nitroimidazoles, cephalosporins, triphenylmethane dyes, anthelmintics, macrolides and sulfonamides. A total of 651 studies were conducted on microbiological indicators. Salmonella was detected in 3 cases, and listeria in meat and meat products in 4 cases. With regard to organization and monitoring of antibiotic residues in food raw materials, food products and animal feed, VGNKI carries out state assignment "Testing and/or examination of goods that are under state control (supervision)". In 2024, 10 999 tests were conducted within the framework of this work, of which 71 were positive.

Feed safety (true)	State monitoring of feed safety	307 positive studies out of 2 673 (11.5%) were conducted for the presence of GMOs in food additives. As part of all studies, 1 286 samples of feed products were analyzed, of which 62 samples were found to have violations (4.8%), which were due to the presence of toxic elements, pesticides, GMOs and DNA of undeclared species.

TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main fucus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Methodology for detection of genetic material of tilapias (genera Oreochromis, Sarotherodon and Coptodon) in one-component fish products (minced meat, fillets) by "real time" PCR with hybridization-fluorescence detection	The method is intended for the study of single-component fish products (fillet, minced meat) for the presence of genetic material of tilapia of the genera Oreochromis, Sarotherodon and Coptodon	Laboratory Expertise Training and Education
Methodology for semi-quantitative assessment of tilapia genetic material in fish products by "real-time" PCR	The method is intended for semi-quantitative assessment of the DNA content of tilapias of the genera Oreochromis, Sarotherodon and Coptodon in fish products, including those subjected to heat treatment, salting or marinating	Laboratory Expertise
Methodology for detection of pangasius genetic material in fish products by "real-time" PCR	The method allows for the detection of DNA from fish of the Pangasiidae family when examining single-component and multi-component fish products, including those that have undergone culinary processing	Laboratory Expertise
Methodology for determining the species of saury (Cololabis saira) and Far Eastern sardine (Sardinops melanostictus) based on	The method is designed to identify species-specific DNA of saury (Cololabis saira) and Far Eastern sardine, ivasi (Sardinops melanostictus) in samples of fish and food products obtained as a result of various technological processing of fish raw	Laboratory Expertise

"real- time" PCR with the oligonucleotide system "saira-iwasi-VKO"	materials (cooked goods, semi-finished products, preserves, canned goods, etc.), including multi-component ones	
Development of a method for determination of mequindox, quinocetone and cyadox metabolites in animal products using high-performance liquid chromatography with mass spectrometric detection	Application for unprocessed and processed food products of animal origin: slaughter products and meat products; slaughter products of agricultural poultry and their processed products; poultry eggs and their processed products, products based on them, food fish products of animal origin from catches of aquatic biological resources and aquaculture objects, fat, lard.	Laboratory Expertise Training and Education
Methodological support of control of residual content of active substances of pharmacological medicinal products in livestock products	Measurement of the mass fraction of methyl benzoquat in livestock products using HPLC-MS/MS method for the establishment of an effective monitoring system, including the identification of risks due to the presence of various xenobiotics	Laboratory Expertise
Development of an approach based on stable isotope mass spectrometry to detect adulteration of dairy products with animal fats	Research based on the method of mass spectrometry of stable isotopes for detection of adulteration of dairy products with animal fats	Laboratory Expertise
Development of methods for the determination of prohibited and harmful substances in food and feed products	Determination of residual nitroimidazoles and coccidiostats in livestock products using high-performance liquid chromatography with mass spectrometric detection	Laboratory Expertise

3. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

4. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose

National Centre for Safety of Fish Agricultural Products	Russia	Europa	Development of 2 scientific methods for testing of fish products
The All-Russian Scientific Institution of Meat Industry named after V.M. Gorbatov	Russia	Europa	Research on the movement of food pathogens within the food chain

TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAH Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAH CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
The All-Russian Scientific Institution of Meat Industry named after V.M. Gorbatov	Russia	Europe	Research on the movement of food pathogens within the food chain. This is a on-going cooperation between VGNKI and Institution
Belarussian State Veterinary Centre	Belarus	Europe	VGNKI participated in 2 rounds of interlaboratory comparison tests with a Belarussian laboratory 1) Research on fatty acid mass fraction (milk powder) and detection of sterols (butter) 2) Organochlorine pesticides mass fraction
Central Research Institution of Epidemiology (subordinate to Rospotrebnadzor)	Russia	Europe	Mutual cooperation on the issues AMR in food products

TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAH?

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Yes

Name of expert	Kind of consultancy	Subject
Ivanova Olga, leading researcher	Expert on the issues of AMR	AMR
Ekaterina Agrinskaya, head of Certification Body	- Organic crop production, livestock farming, beekeeping, aquaculture, mushroom production, processing of organic crop and livestock products, feed production (in compliance with GOST 33980-2016 "Products of organic production. Rules for production, processing, labeling and sales") - Collection, procurement and processing of wild-growing raw materials (in compliance with GOST R 59425-2021 "Organic products from wild-growing raw materials. Rules for collection, procurement, processing, storage, transportation and labeling") - Medicinal products for veterinary use - Feed for productive and non-productive animals, amino acids (lysine, methionine), compound feed, concentrates, protein-vitamin-mineral concentrates, premixes, feed yeast, vitamins, enzyme preparations, feed meal and other feed products - Cosmetics for animal care - Disinfectants for use in veterinary medicine - Sperm of bulls, buffaloes, boars, rams, goats, stallions, donkeys and dogs - Media for dilution, storage and cryopreservation of semen - Meat and fish products, including for storage in the state reserve	State-level certification of food and feed products, certfication of organic produce
Lebedev Alexander, leading researcher	Department of Food and Feed Safety	Food and feed safety of the products, which are distributed on the territory of the Russian Federation, as well as products that go for export or entering via import actions
Gergel Maria, head of department	Department of biotechnology, expert in GMO	GMO, GMO-lines
Nesterenko Irina, head of department	Department of pharmacological medicinal products, safety of food and feed products	The Department conducts quality tests on food and feed samples, develops methodological guidelines

TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes

As part of its activity, VGNKI conducts tests of imported food products in order to evaluate their safety. In 2024, 4 298 samples of products of foreign origin were tested, 67 samples were identified as positive. Countries, which export the most of their products to Russia, are Belarus, Brazil, China, Uruguay.

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOAH, to personnel from WOAH Members?

Yes

a) Technical visit : 1

b) Seminars : 0

c) Hands-on training courses: 6

d) Internships (>1 month) : 30

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	Colleagues from Azerbaijani Food Safety Institute visited VGNKI to establish scientific cooperation in the field of food safety	Azerbaijan	11
C	1) Courses on detection, identification and quantification of GMOs in products of plant origin, feed, seeds and planting material 2) Course on application of molecular and biological methods of research in veterinary medicine and for quality control of products of plant origin 3) Course on training for conducting research according to GOST 34106-2017 "Food products and raw materials. Method of sequencing of fragments of mitochondrial genome of animals and fish to determine species affiliation in single-component products"	Belarus, Kyrgyz Republic	25
	Internships were held to master methods for detecting residues of		

D	harmful (prohibited) substances in food products and feed using enzyme immunoassay, high-performance liquid chromatography with a mass spectrometric detector, gas chromatography, and mass spectrometry with inductively coupled argon plasma	Russia, Belarus	108

TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOAH?

Yes

National/International	Title of event	Co-organiser	Date	Location	No. Participants
Nationally	Intereginal seminar "Rational use of antimicrobial products for veterinary use"	Russian Academy for Personnel Provision for the Agro-Industrial Complex	2024-11-27	Moscow, Russia	100
Internationally	Creation of means for prevention of socially significant infections of farm animals (organized by A. Panin)	FAO, WHO, WOAH, UNEP	2024-12-13	Moscow, Russia	70

TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOAH that may be useful to Members of WOAH

a) Articles published in peer-reviewed journals:

10

1. Krasnikova, M.S., Brusova, M.B., Kozlova, A.D., Gorbacheva, N.S., Dolinskaya, K.G., Yatsentyuk, S.P. DETECTION OF TILAPIA GENETIC MATERIAL IN FISH PRODUCTS BY REAL TIME PCR.Innovations and Food Security, 3 (45), 2024. pp. 7-15.

2. Pyrsikov, A.S. Milyukova, N.A. Application of scar-labeling of the cf-9 locus for genotyping of new tomato breeding samples. Potato and Vegetables. №2, 2024, pp.52-56. DOI: 10.25630/PAV.2024.79.36.007.

3. Bakai, K.A., Safronova, V.A., Priyma, A.D., Nesterenko, I.S., Emelyanov, I.A. Development of methods for immunoenzymatic determination of gentamicin in meat. Vol. 2, 2024, p.366.

4. Ispiryan, A.Z., Mysina, J.S., Batov, I.V. Determination of Fat-Soluble Vitamins by High-Performance Liquid Chromatography Tandem Mass Spectrometry in Feed, Feed Additives. Scopus. Opt. Spectrosc, 2024.

5. Amelin, V.G., Lavrukhina, O.I., Tretyakov, A.V. Batov, I.V Sample screening and determination of 214 veterinary drug residues in food using chromatography high resolution mass spectrometry. Scopus. Anal. Chem. Vol. 79 (3), 2024.

6. Priyma, A.D., Safronova, V.A., Bakai, K.A., Nesterenko, I.S. Determination of the residual content of tylosin in meat products by enzyme immunoassay.

Vol. 2, 2024, p. 456.
7. Gulyaeva, A.Yu., Khrushchev, A.Yu., Kolyachkina, S.V., Muravieva, V.B., Antonova, S.V., et al. (eds.). Certified Reference Material of Tylosin Tartrate. Reference Materials in Measurement and Technology. Switzerland, 2024, pp. 3-21. https://doi.org/10.1007/978-3-031-49200-6.
8. Shibitov, S.K., Petrova, O.V., Safiullin, R.T., Bondarenko, V.O. Effectiveness of the agent "Disinfectsan" against protozoa oocysts on the objects under veterinary supervision. Problems of veterinary sanitation, hygiene and ecology. № 1 (49), 2024, pp. 14-19, DOI: 10.36871/vet.san.hyg.ecol.202401002.
9. Khrushchev, A.Yu., Gulyaeva, A.Yu., Bondarenko, V.O. Determination of trace levels of fenbendazole in milk, yogurt and cottage cheese using surface-enhanced Raman spectroscopy (SERS). Journal of Analytical Letters. https://doi.org/10.1080/00032719.2024.2334635.
10. Gulyaeva, A.Yu., Antonova, S.V., Khodkova, Y.S., Soboleva, N.I., Likhikh, T.N., Bondarenko, V.O. Reference standard' composition of amoxicillin trihydrate. Standard samples in measurements and technologies: abstract of reports. VI International Scientific Conference, Russia, 2024, pp. 57-58.

b) International conferences:
7
1. Safronova, V.A., Priima, A.D., Bakai, K.A., Nesterenko, I. S. Development of express - determination of apramycin in livestock products. Chemistry and Chemical Technology in the XXI century: Materials for the 25th Anniversary International Scientific and Practical Conference of students and young scientists named after outstanding chemists L.P. Kul'ev and N.M. Kizhner, dedicated to the 100th anniversary of the birth of Professor V.P. Lopatinsky. Vol. 1, 2024, pp. 308-309.
2. Shcherbakov, A.V., Lavrukhina, O.I., Tretiakov, A.V., Nekrasov, D.Y., Vergunov, O.P., Surogin, M.V. Soil contamination with pharmaceuticals. Materials for the III International Scientific and Practical Conference "Socially significant infections of livestock animals: prevention and control measures", VGNKI, 2024, p. 123.
3. Safronova, V.A., Priima, A.D., Bakai, K.A., Nesterenko, I.S. Express- determination of gentamicin by enzyme immunoassay. Materials for the International Scientific and Practical Conference named after D.I. Mendeleev, dedicated to the 15th anniversary of the Institute of Industrial Technology and Engineering. Vol. 1, pp. 394-396.
4. Kishkinova, E.S., Yatsentyuk, S.P., Gonchar, D.V., Bagdasarian, E.Yu. COMMON WAYS OF ADULTERATION OF FISH PRODUCTS. Global Issues Conference 2024: Veterinary Medicine, Biology, Biotechnology, Agriculture, Pedagogical and Philological Sciences. Materials for the II International Scientific and Practical Conference. Moscow, 2024, pp. 256- 260.
5. Dolinskaya, K.G., Brusova, M.B., Kozlova, A.D., Krasnikova, M.S., Gorbacheva, N.S., Yatsentyuk, S.P. IDENTIFICATION OF TILAPIA GENETIC MATERIAL IN VARIOUS ONE-COMPONENT PRODUCTS BY "REAL TIME" POLYMERASE CHAIN REACTION METHOD. Materials for the III International Student Scientific and Practical Forum "Global issues forum 2024: Veterinary medicine, Biology, Biotechnology, Zootechnology, Pedagogical and philological sciences", Moscow, 2024,
pp. 165-169.
6. Krasnikova, M.S., Brusova, M.B., Kozlova, A.D., Gorbacheva, N.S., Dolinskaya, K.G., Lozovaya, E.A., Yatsentyuk, S.P. Identification of pangasius genetic material in fish products by "real-time" PCR. Materials for the International Scientific and Practical Conference "ROLE OF VETERINARY SCIENCE AND EDUCATION IN MODERN SOCIETY: to the 100th anniversary of the Vitebsk State Academy of Veterinary Medicine, Vitebsk, 2024, pp. 261-264.
7. Methods of rapid determination of apramycin in meat on the basis of enzyme immunoassay method. XVIII International Scientific and Practical Conference "Scientific bases of increasing productivity, animal health and food security", Krasnodar, 2024

c) National conferences:
6
1. Bakai, K.A., Safronova, V.A., Priima, A.D., Nesterenko, I.S. Methods of express-determination of apramycin in meat based on the method of enzyme immunoassay. Collection of Scientific Proceedings of Krasnodar Scientific Center for Zootechnics and Veterinary Science. Vol. 13 (1), 2024, pp. 329-332.
2. Priyma, A.D., Safronova, V.A., Bakai, K.A, Nesterenko, I.C. Development of methods for determination of macrolide antibiotic spiramycin by enzyme immunoassay. Collection of abstracts of the 10th anniversary of the All-Russian forum of young researchers, 2024, p. 102.

3. Gulyaeva, A.Yu., Balagula, T.V., Rudniaev, D.A., Vorobyeva, I.A., Makhlis, O.A., Kis, I.V. Development of a reference standard of sulfadiazine composition. Materials for the 3rd Scientific and Practical Conference "Current problems of veterinary medicine, zootechnics, biotechnology and expertise of raw materials and products of animal origin". Moscow, 2024, pp. 118-119.
4. Yatsentyuk, S.P. Identification of Coxiella burnetii in breeding products of cattle. Collection of materials of the International Scientific and Practical Conference devoted to the 115th anniversary of the foundation of the Yakutsk bacteriological laboratory and scientific research on veterinary medicine in Yakutia. Yakutsk, 2024, pp. 510-514
5. Development of express determination of apramycin in livestock products. XXV Anniversary International Scientific and Practical Conference of Students and Young Scientists "Chemistry and Chemical Technology in the XXI Century". Tomsk, 2024.
6. Development of methodology for immunoenzymatic determination of gentamicin in meat. XXII Mendeleev Congress on General and Applied Chemistry. Krasnodar region, 2024

d) Other (Provide website address or link to appropriate information):
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11. What have you done in the past year to advance your area of focus, e.g. updated technology?
Methods were developed to identify falsification of fish products. These methods will be used to control safety of fish products of foreign and national manufacturing. The methods will be adopted by laboratories of FSVPS on a national level.
Also, methods were developed for identification of adulterated dairy products with animal fats.
For products of animal origin, methods for identification of residues of medicinal products (metabolites of mequindox, quinocetone and cyadox), nitroimidazoles, coccidiostats and xenobiotics were developed.

12. Additional comments regarding your report:
Activities of International Cooperation Department of VGNKI:
Specialists of the international cooperation department of VGNKI accompanied foreign delegations (Malaysia, Eucador) during their visit in Russia. The topics of food and feed safety were the main concern, as well as the analyses of state veterinary supervision system in Russia. In Q4 of 2024, VGNKI hosted the delegation from Azerbaijan Institute of Food Safety. The Azerbaijani colleagues were interested in scientific methodology of VGNKI for ensuring safety of food products. Preparatory work is still being conducted on signing agreements on scientific and technical cooperation with 2 research centers in China.