



Regulations And Challenges Of Herbal Medicines In Russia

Avdhesh Kumar¹, Dr. M. P. Venkatesh², T.M. Pramod Kumar²

¹M.Pharm, Pharmaceutical Regulatory Affairs, JSS College of Pharmacy, JSS University, Mysuru- 570015

²Department of Pharmaceutics, JSS College of Pharmacy, JSS University, Mysuru- 570015

venkateshmp@jssuni.edu.in

Abstract:

Herbal medicine has been practiced for centuries in many countries but the legality of herbal medicines varies from country to country. In certain countries herbal medicines are well-established, but they are not used under legal claim instead they are regarded under food and therapeutic claim. Developing countries, however, often have a great number of traditionally used herbal medicines and much folk-knowledge about them, but have hardly any legislative criteria to establish these traditionally used herbal medicines as part of the drug legislation. The herbal medicine sector is in a dilemma. Some practitioners would like to continue to practice as they do now, with no further regulation, and accept that their practice is based on tradition and personal experience rather than empirical science. The logical consequence of adopting this form of practice is that we should take a precautionary approach in order to ensure public safety. This article presents overview of regulatory challenges of herbal medicine in world and regulation, types of documents for herbal medicine in Russia. This work clearly gives the overview of the herbal drug registration requirements in Russia and also about the marketing authorization procedure and timelines involve.

Key word: Herbal medicine, Herbal drug regulation in Russia.

Introduction:

The World Health Organization refers to as herbs, herbal material and finished herbal products collectively as herbal medicine. The herbal medicine contains active ingredients which includes parts of plants, other plants material or combination of thereof. According to World Health Organization approximately 80 percent of people depend upon herbal medication as a component of their primary healthcare even today, there is great concern about the safety and efficacy of herbal use. Herbal medicine can potentially contribute to advancement in healthcare; before that has to be overcome the way herbal medicines are managed as food supplement, functional food, health products, or drugs, which caused differential standards and chaotic market. In order to ensure the quality and safety of herbal medicines, the World Health Organization need to propose global unified planning, which includes global management standards and quality standards, radical source of herbs, seed and seedling breeding, planting, harvesting and storage, rational proceeding, manufacture, and quality standards. Moreover, safety guarantee system comprised of rational clinical practice and risk monitoring should be established to improve the safety of herbal medicine and to play more important role in maintaining human health.^{1, 2, 3}

A regulatory framework for herbal medicines can provide greater assurance to consumers. However, the regulations and specifications of herbal medicines vary significantly in different countries.⁴

Current regulatory challenges for herbal medicines:

70 countries have a national regulation on herbal medicines but the legislative control of medicinal plants has not evolved around a structured model. This is because medicinal products or herbs are defined differently in and diverse approaches have been adopted with regard to licensing, dispensing, manufacturing and trading.

- **Lack of knowledge about herbal medicines within national drug authorities^{5,6,7}**

The lack of knowledge about herbal medicines within national drug authorities and the lack of appropriate evaluation methods are factors that delay the creation of national policies, laws and regulations for traditional medicines, contemporary/alternative medicines and herbal medicines.

- **Standardization challenges**^{5,6,7}

For safe and effective use of herbal drugs, consistency in composition and biological activity are essential requirements. However, herbal drugs frequently fail to meet this standard, due to various problems such as

- (1) Difficulties in identification of plants,
- (2) Genetic variability,
- (3) Variations in growing conditions,
- (4) Diversity in harvesting procedures and processing of extracts, and
- (5) The lack of information about active pharmacologic principles

- **Safety challenges**^{8,9}

Safety is a fundamental principle in the provision of herbal medicines and herbal products for health care, and a critical component of quality control and it has been observed that most of the problems associated with the use of traditional and herbal medicines arise mainly from the classification of many of these products as foods or dietary supplements in some countries. As such, evidence of quality, efficacy, and safety of these herbal medicines is not required before marketing. In the same vein, quality tests and production standards tend to be less rigorous or controlled and in some cases, traditional health practitioners may not be certified or licensed. The safety of traditional and herbal medicines has therefore become a major concern to both national health authorities and the general public.

The limited scientific evidence about herbal medicine safety and efficacy as well as other considerations make it important for governments to:

1. Formulate national policy and regulation for the proper use of herbal medicine and its integration into national health care systems in line with the provisions of the WHO strategies on Traditional Medicines.
2. Establish regulatory mechanisms to control the safety and quality of products and practice of herbal medicine.
3. Create awareness about safe and effective herbal medicine therapies among the public and consumers.
4. Cultivate and conserve medicinal plants to ensure their sustainable use.

- **Quality challenges**^{8,9}

If herbal remedy is effective, quality assurance is needed to ensure that the product has the expected effects. Even in the absence of data on efficacy, quality assurance is important, as adulteration of plants is a serious problem. Some of the common adulterants are: botanicals, toxic metals, microorganisms, microbial toxins, pesticides, and fumigation agents. Therefore, quality is a critical determinant of safety.

- **Clinical Trials challenges**¹⁰

Complex structure of herbal medicines is a major challenge for clinical trials. In order to overcome this problem, gain public trust and to bring herbal product into mainstream of today's health care system, the researchers, the manufacturers and the regulatory agencies must apply rigorous scientific methodologies and clinical trials to ensure the quality and lot-to-lot consistency of the traditional herbal products. Since the identities of the final products are not well defined and there are essentially no purification steps involved in the productions of herbal products, the quality and lot to lot consistency of the products rely mostly on the quality control of source materials and their manufacturing into the final products. Using modern technologies the quality and consistency of the heterogeneous herbal products can be monitored. A well-designed clinical trial is the method of choice to prove the safety and effectiveness of a therapeutic product.

- **Pharmacovigilance challenges:**^{11,12}

The commonest myth regarding herbal medicines is that these medicines are completely safe, and therefore can be consumed safely by the patient on his/her own, without a physician's prescription. This belief has led to large-scale self-medication by people all over the world, often leading to disappointing end-results, side-effects, or unwanted after-effects. Large scale awareness of people is needed to develop pharmacovigilance practices for herbal medicines. The diversity of herbal medicine adds to the challenges of herbal pharmacovigilance including basic questions such as defining the most appropriate herb naming system (botanical, common, pharmaceutical name or herbal drug name) and validation of the botanical identity of the herbal ingredients.

HERBAL MEDICINE REGULATIONS IN RUSSIA¹³

The main regulatory body is Federal Service for Supervision of Health (Roszdravnadzor). Roszdravnadzor is administered by the Ministry of Health and is governed by the Constitution of the Russian Federation, Federal constitutional laws, federal laws, acts of the President and the Government of the Russian Federation, international treaties of the Russian Federation, the acts of the Ministry of Health, as well as the present regulations.

Service operates directly and through its territorial bodies in interaction with other federal executive bodies, executive bodies of subjects of the Russian Federation, local authorities, public associations and other organizations.

Herbal Medicinal Product: As per Art. 4 of the Russian law No. 61-FZ, herbal medicinal products are products manufactured from herbal substances or combinations. Herbal substances are the plants or their parts used for the manufacture of the herbal medicinal products.

Classification of Herbal Medicinal Products in Russian Federation:^{14, 15, 16}

Depending on the processing method used, the pharmaceutical formulations can be classified into the following categories:

1. Medicinal plant materials are dried or sometimes newly gathered parts of medicinal plants (rarely, integral plants) used for the production of medical drugs. Medical species are mixtures of a few kinds of crushed or integral plant materials with salts and ethers as additives.
2. Summarized non-refined or galenic formulations contain, along with biologically active substances, a number of concomitant substances. In the course of production, inactive ingredients are removed from galenic formulations. These include herb infusions and decoctions, tinctures, extracts and elixirs.
3. Novo-galenic formulations are phyto-preparations containing a mixture of biologically active substances that are free from inert and concomitant ingredients.

4. Active pharmaceutical ingredients (API) – individual compounds isolated from plants (serotonin, morphine, rutin, lysergin, etc.). These compounds have direct action and a majority of them are used for the preparation of injection formulations.
5. Combined phyto-preparations contain, along with the substances extracted from plants, synthetic, endocrine and other types of ingredients such as “Allokol” (based on dry extracts from garlic and nettle with coagulated active coal as additive), “Besalol” (contains viscous extract of belladonna and phenylsalicylate), “Valocormyde” (based on the tincture of valerian, lily of the valley and belladonna with sodium bromide and menthol as (additives, etc).

Presentation and format of Dossier for initial submission^{18, 19, 20, 21, 22, 23, 24}

Russia has its own format for the application dossier. The **Russian** language is mandatory for all documents including bibliographic references. Article 18 of law No. 61-FZ lays down the complete basic structure of the application dossier. (Refer table no. 1)

Preparation of documentation:

Product Information

As a rule, the following special aspects concerning product information apply:

- There are no differences between summary of product characteristics and product information leaflets, since only one common document for both patients and health care professionals (HCP) is approved at the end of procedure. This is referred to below as the product information leaflet (PIL), which has to be put in the each secondary package along with the medicinal product;
- Usually there are some requirements regarding minimum font size, although readability testing is not required;
- Color mock-ups of the outer and immediate packaging have to be approved.
- The finished packaging has to comply 100% with the approved mock-ups, whereas some placeholder are normally acceptable, e.g. for pack-size, registration number,
- Braille is optional

According to Article 18.16 of Russian law, the **PIL** must contain following information.

- Name of the medicinal product (INN and brand name);
- Pharmaceutical form including qualitative and quantitative composition of active substance(s) and excipients;
- Indications;
- Contraindications;
- Posology, method of administration, time of application/intake (if relevant), duration of treatment (including pediatric population subsets before and after one year)
- Special warnings and precautions for use;
- Symptoms and methods of the initial treatment of an overdose;
- Special considerations concerning starting or withdrawal of treatment, if applicable;
- Actions in case of dose omission(s);

- Possible side effects;
- Interactions with other medicinal products and food;
- Considerations for special populations: pregnancy, lactation, children, patients with chronic diseases.
- Effects on ability to drive and use machines;
- Shelf-life and instruction not to use medicinal product after the expiry date;
- Storage conditions;
- Special precautions for storage the medicinal product out of the sight and reach of children;
- Special precautions for disposal of unused medicinal product, if applicable;
- Name and address of the manufacturer and manufacturing site(s);
- Legal status (Rx or OTC)

According to Article 46.1. Of Russian law, the following information must be provided on the labeling:

- On the immediate packaging: Name (International nonproprietary name or brand name), batch, expiry date, strength or concentration/volume.
- On the outer packaging: Name (International nonproprietary name and brand name), manufacturer, batch, number of registration certificate, expiry date, method of administration, strength or concentration/volume, pack size, pharmaceutical form, legal status, storage conditions, special precautions.

Russian language is obligatory for the PIL and labelling. There are some special considerations for herbal medicinal products, i.e. no printing on the immediate packaging and a "Radiologically tested" label on the outer packaging, but these requirements apply to herbal teas only. (Refer table no. 2 & 3)

Current Situation in Russia^{23, 24, 25}

The results of recent survey show that 14% of the Russian population regularly uses phytopreparations for treatment and 44% uses them from time to time. Phytotherapy is a separate branch of medicine in Russia, and herbal medicinal preparations (HMPs) are considered official medicaments. A herbal medicinal preparation is the finished product, and this term refers to a medical preparation containing herbal materials and/or herbal preparations as its active ingredients. More than 600 HMPs have been registered for use as medications and are included in the Governmental Register of Medicinal Preparations.

All aspects relating to the development, preclinical, and clinical studies, evaluation, state registration, standardization and quality control, manufacturing, preparation, storing, transporting, importing and exporting, advertising, releasing, selling, using, and disposing of pharmaceutical preparations (including HMPs) are regulated by Federal Law No. 61 FZ (dated 12.04.2010) "Regarding the circulation of drugs".

Conclusion:

The Russian healthcare market is expanding rapidly, drawing more interest by offering massive opportunities for Herbal Pharmaceutical companies. To sustain the potential and safeguarding the public health, Russia has laid regulations and stringent quality controls for herbal medicines. A thorough study of regulatory requirements of herbal medicinal products in Russia is essential for gaining quicker marketing approval.

Table 1: Russian Application Dossier

Sl. No.	Dossier Content
Art.18.2 Application form containing following information:	
1	Name and address of Applicant and /or manufacturer
2	Name of the medicinal product (INN and Brand name)
3	Qualitative and Quantitative composition
4	Pharmaceutical form, strength, posolgy, method of administration and proposed shelf- life:
5	Overview of pharmacologic, pharmacodynamic and immunobiological properties of medicinal product
6	Highest price (if subject of special list of the essential medicinal products)
7	Justification for not conducting clinical trials of the product authorized more than 20 years, if applied
Art. 18.5 Annexes to application form	
1	Proof of payment of fees depending in the type of application (request for local CTA, or assessment for the product authorized for Russian market more than 20 years, or in case Russia was included in the international multicentre studies)
Art. 18.3 Dossier for Submission containing	
1	Mock ups of the outer and immediate packaging
2	GMP certificate of the manufacture of the finished product, notarized copy
3	Draft methods of the quality control of the finished product (so called Normative Documentation, including composition of the finished product, specifications, analytical procedures, mock ups , description of labeling, container closure system, shelf life etc
4	Description and flow diagram of manufacturing process of active substance and finished product
5	GMP certificate of manufacturer of active substance, notarized copy, containing name of the substance, address of manufacturer, shelf life
6	Specification of active substance
7	Methods of quality control of active substance (ND) or reference to the monograph in pharmacopoeia, if available
8	Information on storage and shipment conditions of finished product.
9	Reports on results of non-clinical studies
10	Draft Clinical Protocol
11	Investigator's Brochure
12	Patient information sheet including informed consent
13	Information on compensations for participants of the clinical trial
14	Report on results of international multicenter clinical trial partly conducted at the local Russian sites, if available
15	Draft SmPC/PIL including composition of finished product
16	Certificate of a Pharmaceutical Product (CPP), for the imported medicinal product;
17	Request for CTA as required per Art. 19 - 22 of law, including application form, Curriculum Vitae (CV) of investigators, copy of contract on the compulsory insurance (detailed maximum quantity of study participants), information on clinical sites, and

	timeframes of the study
Art. 23.2 Examination of quality of medicinal product and risk/benefit assessment after conducting local clinical trial:	
1) Application to restart of the registration procedure;	
2) Final clinical study report;	
3) Fees for quality control and risk/benefit assessment	
Art. 23.5 Samples of the medicinal product and corresponding reference substances in amounts sufficient for the quality control.	

Table 2: Normative Documents Structure

Sl. No	Normative Documents Structure
1	Name of the medicinal product (brand name in Russian);
2	International nonproprietary name (in Russian), structural formula and molecular weight of active substance, if applicable
3	Quantitative composition of the finished product, e.g. for tablets separately for core and coating of tablet, including references to quality standards for all component
4	Specification : <ul style="list-style-type: none"> • Appearance (e.g. colour, shape of the tablets); • Identity (physical and chemical methods, e.g. TLC); • Average mass and uniformity of mass; • Dissolution or disintegration (e.g. for herbals); • Impurities (related substances), (not relevant for herbals, as a rule); • Microbiological purity; • Uniformity of dosage units (optionally, depending on active substance; alternatively to the uniformity of mass); • Assay (e.g. HPLC, spectroscopy, titrimetry).
5	Analytical Procedures (corresponding to the specification): <ul style="list-style-type: none"> • Appearance (e.g. organoleptically); • Identity (e.g. description of TLC method); • Average mass and uniformity of mass; • Dissolution or disintegration; • Impurities (related substances);
6	Analytical Procedures (corresponding to the specification):

	<ul style="list-style-type: none"> • Appearance (e.g. organoleptically); • Identity (e.g. description of TLC method); • Average mass and uniformity of mass; • Dissolution or disintegration; • Impurities (related substances); • Microbiological purity; • Assay (e.g. for HPLC including chromatographic conditions, system suitability tests; description of reagents and reference standards with references to their quality standards).
7	Container closure system.
8	Labelling (mock-ups of outer and immediate packaging).
9	Shipment conditions of finished product
10	Storage conditions;
11	Shelf-life.
12	Pharmacological group (ATC-code).

Table No. 3 Timelines

No.	Timelines	Procedure
Assessment Step 1		
1	Day 0	Submission of the application dossier to the MoH, containing application form, quality part, non-clinical assessment and (preliminary) request for CTA including draft clinical protocol, investigator's brochure, patient information leaflet, intended payment and compensations to the patients, and proof of payment of the fees for CTA assessment. If Russian centres were included in international multicenter clinical trials, results have to be provided. Any further clinical data generated outside Russia can be voluntarily provided. The entire dossier and additional data must be in Russian.
2	5 working days after application	Validation of application by the drug regulatory affairs department of the MoH, in case of positive validation to make a decision on: <ul style="list-style-type: none"> • Assignment of the review of the (preliminary) request for CTA by the expert body and ethics committee, or • In case local clinical data were generated

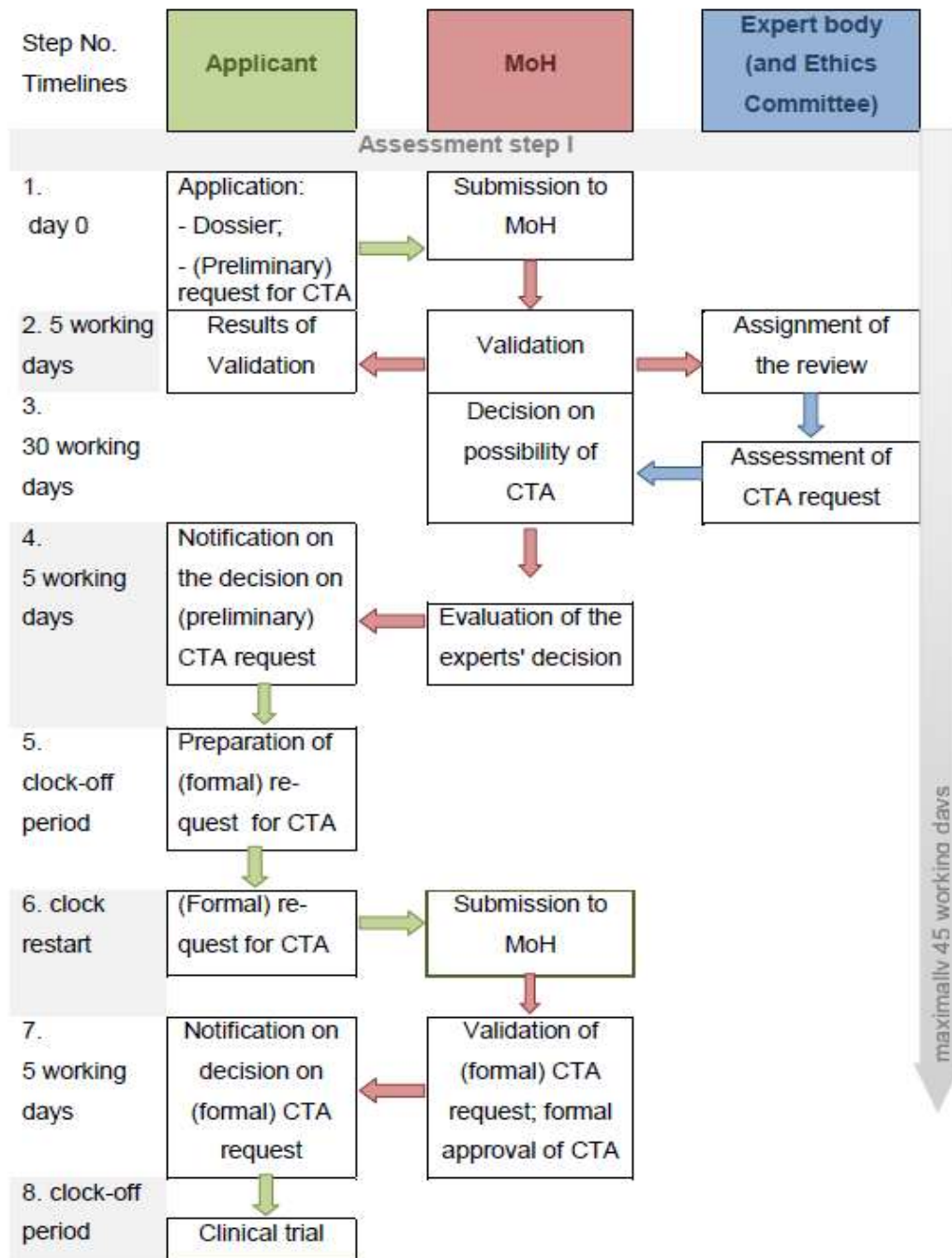
		<p>within the scope of international multicenter clinical trials or the medicinal product was registered more than 20 years before in Russia, assignment of the benefit/risk assessment, see Assessment step II.</p> <p>The applicant is notified of the results of the validation; in case of the negative opinion also of the reasons for rejection of the application.</p>
3	30 working days after receipt of assignment (Article 20)	<ul style="list-style-type: none"> • Assessment of the (preliminary) request for CTA by the expert body, issuing of the assessment report on the application; • Conclusion of the ethics committee, approval/disapproval of clinical trial.
4	5 working days after receipt of decisions (Article 21)	<p>Evaluation of the experts' decision by the MoH, in case of positive evaluation (if negative, see section 15):</p> <p>Notification of the applicant on the decision on the (preliminary) request for CTA;</p> <ul style="list-style-type: none"> • In case of positive decision on (preliminary) request for CTA: clock-stop until the applicant's request for the (formal) initiation of the clinical trial; • In case of the negative decision on (preliminary) request for CTA: rejection of the MAA.
5	clock-off period	Preparation of the (formal) request for CTA by the applicant
6	clock restart (Article 22.1)	Submission by the applicant of the (formal) request for CTA containing, amongst other things, details of investigators and sites where the trial is intended to be conducted, contract on patient health insurance with the notification of the maximal number of study participants, timelines of the study.
7	5 working days after receipt of formal) CTA (Article 22)	<ul style="list-style-type: none"> • Validation of (formal) request for CTA by the MoH; • MoH decision on the (formal) request for CTA Notification of the applicant of the decision, in case of negative opinion, of the reasons of rejection; • Issuing of approval of CTA.
<p>Maximum of 45 working days in total for Step I (timelines for the assignment of the expert body is not</p>		

<i>explicitly scheduled by the law)</i>		
8	clock-off period	Conduct of the clinical trial by the applicant.
Assessment Step 2		
9	clock restart (Article 23.2)	Submission by the applicant of the following documents: <ul style="list-style-type: none"> • Application to restart of the MAA; • Final clinical study report; • Proof of payment of fees for the quality and risk/benefit assessment.
10	5 working days after application for MAA restart (Article 23.3)	Validation of clinical study report; <ul style="list-style-type: none"> • Decision on restarting the MAA; • Notification of the applicant of the decision, in case of negative opinion, of the reasons of rejection.
11	110 working days after receipt of samples, clinical study report and re-assignment from MoH (Article 23.1)	Assessment of the application by the expert body: <ul style="list-style-type: none"> • Assessment of the quality of the medicinal product by the quality experts; • Benefit/risk assessment based on the results of the clinical trial by the clinical experts; • Provision of quality and clinical assessment reports to the MoH.
12	15 working days after receiving positive decision on MAA restart	The Applicant has to supply an adequate number of samples of the following to the qualified analytical laboratory for the assessment of the quality of the medicinal product: <ul style="list-style-type: none"> • Samples of the medicinal product under assessment, produced in accordance with the manufacturing documentation submitted; • All reference samples and samples of the active substance, if required for quality control
13	3 working days after receiving samples (Article 23.6)	The qualified analytical laboratory has to acknowledge receipt of samples to the applicant and MoH
14	5 working days after receiving the assessment	<ul style="list-style-type: none"> • Evaluation of the quality and clinical assessment reports by the MoH;

	reports (Article 27)	<ul style="list-style-type: none"> • Decision on approval or non-approval of the marketing authorisation; notification of the applicant of the decision; • In case of positive decision, issuing of the registration certificate and entry of the approved medicinal product in the State Registry of Medicinal Products; • New registration certificate is valid for the period of 5 years; after renewal the period of validity is unlimited (Article 28).
15	(optional for MoH) (Article 25) 40 working Days 15 working days	<p>In case of negative evaluation of the experts' decision by the MoH (e.g. incomplete assessment report, information of the influence of the assessment by the applicant or third party), repeated assessment can be initiated by MoH:</p> <ul style="list-style-type: none"> • Reassessment by the expert body assigned by MoH; • Re-evaluation by the ethics committee.
<p>Maximum of 160 working days in total for Step II (timeline for the re-assignment of the expert body is not explicit scheduled by the law).</p>		
<p>Theoretically possible to reach the deadline of 210 working days as defined by Article 13.4 of the law, because some steps run simultaneously (e.g. 11 and 12- 13): 45 working days Step I + 160 working days Step II = 205 working days in total</p>		

Figure no. 1 Flow chart of Marketing authorization procedure

Flow-chart of MAA procedure in Russia



REFERENCES

1. Standardization of herbal medicines. Available at http://www.academicjournals.org/article/article1380017716_Kunle%20et%20al.pdf
2. Regulatory situation of herbal medicines. Available at http://www.dcscience.net/Report_on_Regulation_of_Herbal_Medicines_and_Practitioners.pdf
3. Report on the regulation of herbal medicines and practitioners.
4. The Safety of Herbal Medicine: From Prejudice to Evidence. Available at <http://www.hindawi.com/journals/ecam/2015/316706/>
5. Current Scientific Status and Regulatory Control of Herbal medicine. Available at http://www.ijrap.net/admin/php/uploads/639_pdf.pdf
6. Regulatory issues of herbal medicine. Available at www.clininvent.com/.../Regulatory%20issues%20for%20traditionl%2
7. Regulatory situation of herbal medicine worldwide. Available at <http://apps.who.int/medicinedocs/pdf/whozip57e/whozip57e.pdf>
8. WHO guideline on safety monitoring. Available at

apps.who.int/medicinedocs/documents/s7148e/s7148e.pdf

9. Guidelines for the Appropriate use of Herbal Medicines. Available at apps.who.int/medicinedocs/en/d/Jh2945e/11.html
10. Framework for overcoming barriers of complementary and alternative medicine acceptance into conventional healthcare system. Available at http://www.academia.edu/5116752/Framework_for_overcoming_barriers_of_complementary_and_alternative_medicine_acceptance_into_conventional_healthcare_system
11. Pharmacovigilance of Herbal Products. Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3159283/>
12. Pharmacovigilance of Herbal Products in India. Available at https://www.researchgate.net/publication/51620397_Pharmacovigilance_of_Herbal_Products_in_India
13. Regulatory framework for federal service for surveillance in healthcare. Available at <http://www.roszdravnadzor.ru/en>
14. Russian Federation Federal Law On Circulation of Medicines 61-FZ (EN). Available at https://www.unodc.org/res/cld/document/rus/federal-law-on-circulation-of-medicines_html/Russian_Federation_Federal_Law_On_Circulation_of_Medicines_61-FZ_EN.pdf
15. Medicinal Plants of the Russian Pharmacopoeia; their history and applications. Available at <http://www.sciencedirect.com/science/article/pii/S0378874114002827>
16. European view on current regulatory legislation in the CIS countries. Available at http://dgra.de/media/pdf/studium/masterthesis/master_dranov_a.pdf
17. Regulatory framework for federal service for surveillance in healthcare. Available at <http://www.roszdravnadzor.ru/en>
18. Russia. Functions. Federal service on surveillance in healthcare and social development of Russian federation. Roszdravnadzor. Russia. Ministry of Health; 2007. [Cited 2012 Dec 15]. Available from: <http://www.roszdravnadzor.ru/i/upload/files/1188395609.65833-4011.pdf>
19. Alyona C. Registration of Pharmaceutical products in Russia. Pharmareg. [Internet] [Cited 2015 Jan 25]. Available from: <http://pharmareg.ru/upload/ReportAChorichFrankfurt.pdf>
20. Regulation of Herbal Medicinal Products in Russia. Available at <https://www.thieme-connect.com/products/ejournals/abstract/10.1055/s-0032-1307488>
21. States registration of herbal drug in Russia. Available at <http://www.msp.ua/registration-medicinal-products-russia.html>
22. Docs for registration in Russia _for medical. Available at <http://www.china-canny.com/html/fqabv.html>
23. Satyanarayan, Shanta. "Full Scale Treatment of Herbal Pharmaceutical Industry Wastewater." [Internet] [Cited 2014 Nov 15] Available at <http://www.ijcps.org/sp1/p7.pdf>
24. National Policy on Traditional Medicine and Regulation of Herbal Medicines- Report on WHO global survey. [Internet]. [Cited 2014 Nov 15] Available at <http://apps.who.int/medicinedocs/en/d/Js7916e/9.4.html>
25. <http://globalresearchonline.net/journalcontents/v31-1/30.pdf>