



INSTITUTIONAL REVIEW

Bandaranayake Memorial Ayurvedic Research Institute (BMARI)



**A report prepared for the
National Science and Technology Commission
by**

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Acronyms

BMARI	Bandaranaike Memorial Ayurveda Research Institute
CEO	Chief Executive Officer
COSTI	The Coordinating Secretariat for Science, Technology and Innovation
HDC	Health Development Committee
ITI	Industrial Technology Institute
ISO	International Organization for Standardization
MRI	Medical Research Institute
NASTEC	National Science and Technology Commission
NGO	Non-Governmental Organization
NHDC	HDC/ National Health Development Committee
NMRA	National Medicines Regulatory Authority
NSF	National Science Foundation
OPD	Out-patient Department
R & D	Research and Development
RDI	Research Development and Innovation
S&T	Science and Technology
SER	Self-Evaluation Report
SWOT	Strengths, Weaknesses, Opportunities and Threats
WHO	World Health Organization

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Executive Summary

The Bandaranaike Memorial Ayurveda Research Institute (BMARI) is the pioneering Government Ayurveda Research Institute established in 1962 based on the Ayurveda act (**Ref. 1**) of 1961 and operates under the purview of the Ministry of Health. The Institute consists of the administration section, healthcare service division (OPD, wards & pharmacy), pharmaceutical botany division, pharmaceutical chemistry & medicinal drug quality control division, literary research division, project division, and an herbal garden. Most departments are currently headed by acting medical officers. According to the mandate of the BMARI, it should engage with multi-disciplinary research in Traditional and Ayurveda systems of medicine.

This Review of BMARI was carried out by the panel of experts appointed by the National Science and Technology Commission of Sri Lanka (NASTEC) to assess the current situation and to identify the gaps and required changes needed for the smooth and productive functioning of the institute. It includes the organizational structure, operations, and process, human resource management, infrastructure and policies for the improvements of the institute. It was carried out by the participatory approach abiding by the guidelines of the NASTEC.

Panel members observed the operational activities and performance of the institute thoroughly. Several focus group discussions were done with relevant authorities on the basis of administrative, management, clinical and experimental research facilities and infrastructure. Interviews were carried out with different categories of employees and stakeholders. Institutional reports and records were closely reviewed. Further, panel discussions were held at various stages of the review process to obtain clarifications on controversies and for confirmation of inferences made by panel members. Individual observations made by the panel members were also discussed in detail and included in the report with the agreement of the members. Performance of BMARI was assessed under nine (9) different aspects to identify root causes of poor performance; 1. Institutional response to external and internal environment in planning organizational strategy and Master plan, 2. Planning Science & Technology (S&T) Programs and priorities, 3. Planning S & T/ Research and Development (R & D) Projects, 4. Project management and maintenance of quality, 5. Human Resource Management, 6. Management of organizational assets, 7. Coordinating and integrating the internal functions, units and activities, 8. Managing information dissemination and

and 9. Monitoring, evaluation and reporting. Several recommendations were made by the Team based on the evidence

The panel highlighted the importance of having institutional policies and if necessary, amendments of the Act considering current demand. Following changes are being suggested for the development of the BMARI in a view to serve the country.

1. Providing Autonomy to BMARI

It is recommended to establish a board of management/governing council with members including secretaries/representatives of relevant line ministries, eminent scholars in the field and certified practitioners in the country. Director should directly report to the board of management /governing council.

2. Corporate Plan

It is strongly recommended to initiate a proper mechanism for the formulation of a corporate plan for BMARI with a time-bound action plan.

3. Financial Independence

Propose to establish a finance division at BMARI with director finance or similar position for effective management of financial assets. Also, the panel suggests separate annual budgetary allocation for BMARI from the treasury.

4. Planning and Implementation Unit

Propose to form a central planning unit for RDI with experience scientist to guide, monitor and review RDI projects.

5. Recruitment of Staff to BMARI

Director should be preferably from the Ayurveda sector with strong research background and should be recruited through an open advertisement. The current practice of rotation of staff from the Department of Ayurveda to BMARI and vice versa should be restricted and permanent scientists should be recruited together with a sufficient number of technical officers. The number of scientific staff at BMARI is grossly inadequate for the expected functions. The committee also noted that there is no approved organogram of the institute. The institute should revise the organizational structure creating a hierarchical position for the senior scientists.

6. Integrated Research Teams

Propose to encourage multidisciplinary approaches in research development and innovations with the involvement of scientists, pharmacists, biomedical engineers and clinicians.

7. Clinical and Administrative Audits

It is recommended to establish an auditing system for the research projects, clinical studies, finance management and all the relevant functions carried out in BMARI.

8. Monitoring and Evaluation

It is recommended to establish a monitoring and evaluation procedure for administrative, financial, clinical, research and development activities using accepted tools and do the monitoring and evaluation in regular intervals.

9. Institutional Ethics Review Committee and Committee on Legal Matters

In order to enhance the quality and quantity of clinical research at BMARI and enabling them to publish in reputed peer-reviewed journals, the panel strongly recommends an Institutional Research Ethics Review Committee with the approval of the Ministry of Health. Further, it is important to form a unit or a special committee to handle related legal matters including MOU, agreements and intellectual property rights.

10. Annual Conferences and Institutional Review Meetings

It is proposed to streamline the dissemination processes of research findings such as research symposia, workshops, stakeholder meetings and also performance review meetings continually and regularly. The establishment of an international research collaboration unit is needed to initiate benchmark the global experiences and knowledge sharing. It was also noted during the stakeholders meeting that the most of the stakeholders are not aware of the activities and services provided by the BIMARI. The panel recommends the BIMARI should conduct promotional and awareness programmes among the stakeholders viz. Harbal product industries, Desheeya Chikithsha and Ayurvedic physicians etc.

1. INTRODUCTION

The Bandaranaike Memorial Ayurveda Research Institute (BMARI) is the pioneer state Ayurveda Research Institute, with Multi-disciplinary research complex, research hospital, laboratory complex and a herbal garden spreaded over 17 acres. This institute is in the national health system under the state Ministry of Indigenous Medicine promotion, Rural and Ayurvedic Hospitals Development and Community Health. Entire hospital and laboratory complex is expected to focus on research activities than the routine patients services.

Mandate of this institute is to create possibilities of checking the plant species for medicinal quality, soil experiment, chemical analysis of the herbal raw material and chemical analysis of the constructed formulas. Sri Lanka nearly spends over US \$ 10 Million on importing the herbal raw material mostly from India. There were 74 items, which derived from 72 plant species. Even though few varieties could be found in Sri Lanka that is not adequate to match the demand. Out of the 72 varieties 34 plants not being tested for soil compatibility for their growth. Therefore it was a huge challenge that BMARI has with regards to the analytical work.

History of Sri Lankan Traditional medical knowledge goes beyond 3000 years. Ayurveda system, which was originated in India, was introduced in 5th Century BC. It was handed down from generation to generation preserving the originality. This medical knowledge embedded into the native culture and tradition with its compatibility and acceptance of the people. Also it was mainly sustained with the skills and the efficiency of people who delivered that. In some era it received the royal patronage where kings supported to build hospitals and assisted in making medicine. In ancient time there were few kings who were accomplished as physicians and surgeons such as King Buddhadasa 341- 370 AD (**Ref. 2, Buddhadasa, 1910**). After the introduction of allopathic medicine during the ruling period of British (1915-1948) this tradition was neglected. Resurgence of Indigenous Medicine sector begins after the independence. During the period of Prime Minister, Mr. S. W. R. D. Bandaranaike, Ayurveda Medical colleges were taken to the government administration and numbers of new Ayurveda hospitals were established. He also created a separate Department for the management and administration of these Ayurvedic institutions. He wanted to promote the cultivation of medicinal plants, which needs to produce the Ayurvedic formulas. Three years after the death of him in 1962, Bandaranaike Memorial Ayurveda institute was established.

The Traditional Medical system of Sri Lanka has many diverse subcategories including Ayurveda, Siddha, Unani and Deshiya Chikitsa. The importance of these systems has been taken into consideration for many decades. This was originally discussed in the way back in

1930. In 1962 with the collaboration of the Government of India the Bandaranaike Memorial Ayurvedic Research Institute (BMARI) declared opened by the then Prime Minister of India. This institute is expected to provide the leadership in traditional medical research activities in 3 major directions: clinical research, drug research and literary research.

Not only BMARI, the entire Indigenous medical sector is working based on Ayurvedic act number 31 of 1961. It was only amended as act number 7 in 1977. There was no Ayurveda or indigenous policy in parallel to the act. Therefore BMARI didn't have the direction as an institution, with an institutional master plan, annual action plans or strategic framework. Therefore all the units including the laboratory faced several issues with related to the decision making on upgrading of sections such as infrastructure, Human resource, process development and technology integration.

Currently government of Sri Lanka has taken many initiatives to improve the indigenous/traditional medical system by integrating technology for effective conservation, efficient utilization of medicinal plants and promoting multidirectional research. As the people were gradually moving into the natural medical practices, global market opportunities are rising. Currently China is dominating by contributing nearly 30 % of global market. Sri Lanka is far behind this target; therefore, need highly research driven culture in the indigenous sector for the development of this as an economic venture. Good laboratory practice (GLP) is an essential component in the development of business opportunities, which attract many investors, overseas students, researches and academics. Also, Sri Lanka identified by the International center for plant conservation, Germany as one of the important country that has many native plant, which need preservation. BMARI is one of the listed institutions that need action to protect these plants and maintain a genetic laboratory for research. (**Ref. 3, Leipzig, 1996**).

As the premier institute, BMARI is expected to conduct novel experiments in Indigenous sector on various formulas, products and related traditional practices. It includes application of modern technology in the production and in treatment methodologies of the indigenous medicine. Development of methodologies with related to the production of traditional formulas preserving the entire quality is a challenge compare to the technologies used in the allopathic pharmaceutical industry. Department of Ayurveda expect BMARI to adopt technologies with the production of drugs and other herbal tonics and qwatha or kashaya formulas. This will strengthen the capacity of production to the trending demand of the herbal medicine.

With the significant increase in the global use of Ayurvedic / Indigenous Medical preparations,

concerns on their efficacy and safety is also increased. Therefore, it has become a practice to ensure the standards of each and every formula before reaching the market. The laboratory system has a vital role in this context. BMARI was expected to take the leadership and the challenge through these issues, liaising even with the private manufacturers local and overseas. As Indigenous medical preparations are manufactured with modern technologies to cater the increasing demand, the research laboratories having a major role to standardize medicinal quality and efficacy of the product before prescribe and distribute. Most of the universities collaborate with these activities. BMARI was unable to complete these projects with the given time task, due to the incompetency of laboratories and lack of particular expertise to perform the tests.

According to the Self Evaluation Report of the BMARI, there was a severe shortage of the staff in every unit, especially in the laboratories. The Ministry of Finance and Planning did last amend cadre approval for BMARI in 2013, and permanent research officers for each sections of labs were approved: this included the sections of Botany, Gene Engineering, Agriculture, Plant Science, wanaspathy, Pharmacology, Medical technology, Biology, Food science, quality control, Human Biology, experiment, chemistry, molecular biology, toxicology, Medical micro biology, Medical physics and social science.

The vision and the mission

The vision of the institute is ‘to be the leader in Ayurvedic research for the nation’ and the mission is ‘Focused & well-planned research and development in every aspect of Ayurveda to enhance & improve the contribution of Ayurvedic medicine to the healthcare of mankind’.

Goals

The institution has identified mainly three goals stated in the self-evaluation report provided to us as follows:

- i. To ensure the formation of a self-sufficient world community by the application of scientific research methodology based on Ayurvedic principles and concepts
- ii. Discovery of new indigenous medical preparations for providing safe, qualitative and economical treatments through Ayurvedic research
- iii. Establishment of an appropriate background to provide safe and qualitative therapeutic treatments through Ayurvedic research

The Institute is expected to provide leadership in traditional medical research in the country.

Existing Organizational Structure:

BMARI is managed under the purview of the Department of Ayurveda and headed by a Director. Deputy Director is supposed to assist the Director in the administrative work. It consists of the following divisions & sections:

- i. Administration section – functions under the Director, Deputy Director and the Administrative Officer
- ii. Healthcare service division (OPD, wards & pharmacy) – functions under a Chief Medical Officer (Residential) and a Chief Medical Officer (OPD)
- iii. Pharmaceutical botany division – proposed to function under a Scientist (of Sri Lanka Ayurvedic Medical Service); a formal appointment to this post has not yet been made by the appointing authority, currently, a Medical Officer is assigned to look after the division.
- iv. Pharmaceutical chemistry & medicinal drug quality control division - proposed to function under a Scientist (of Sri Lanka Ayurvedic Medical Service); a formal appointment to this post has not yet been made by the appointing authority, currently, a Medical Officer is assigned to look after the division
- v. Literary research division – consists of a library and a palm leaf manuscripts depository; a Medical Officer has been assigned to lead the division
- vi. Project division – proposed to streamline all development activities; a Medical Officer has been assigned for that purpose

According to the organogram (**Annex 1**) of the Department of Ayurveda BMARI is directly comes under the Department together with Teaching Hospital, Research Hospitals and Herbal Gardens. The committee noted that the institute does not have approved organogram. The positions of the senior scientist is only a virtual post. The BIMARI should revise the organizational structure and develop its organogram giving a hierarchical place for the senior scientists. This review process was conducted with objectives specified by the National Science and Technology Commission of Sri Lanka (NASTEC). The key objective was to assess the gap between the expected outcome and existing functions and utilization of public funds in a view to having a major technology transfer.

Guidelines provided by NASTEC and the expert opinion of the Panel of Reviewers utilized to generate the facts mentioned in subsequent chapters of the report. Panel members observed the institution including the areas related to administrative, management, clinical and experimental research facilities and infrastructure. Different categories of employees and stakeholders were interviewed to get their individual views. Institutional reports and records were closely reviewed. Further, panel discussions were held at various stages of the review process to obtain clarifications on controversies and for confirmation of inferences made by panel members. As a result, it was possible to make final commendations and recommendations which could be utilized by the institution in identifying its strengths and opportunities to plan future activities.

2. PROCEDURE ADOPTED FOR PERFORMANCE REVIEW

Science & Technology Development Act No. 11 of 1994 mandates the National Science and Technology Commission (NASTEC) to review the progress of S&T institutions in relation to objectives set out in Section 2 of the Act. The review panel was appointed by the NASTEC based on their expertise. The team was guided by the directions given in the guidelines prepared by NASTEC.

NASTEC coordinated BMARI and directed the review team members. The self-assessment report of the BMARI was communicated through NASTEC to the review team on 22nd November 2019. Senior Scientist of NASTEC explained the objectives of the review. The methodology of the review was a participatory approach and during the site visits, the team identified the respective individuals and groups to be interviewed.

The review team and NASTEC representatives visited BMARI, Navinna, Maharagama on 5th December 2019 (**Annex-2.1, Photographs**) Commissioner of Ayurveda was also invited to participate in the initial meeting. The review team explained the objectives, advantages and purpose of the review, to the Director, BMARI and the representative of scientific, management and hospital staff. The Director of the institution made a presentation on the self-assessment report.

Extensive discussions were made with the members of the staff during the observational visits. The review team managed to visit all the divisions of BMARI including the hospital, clinics, library and research laboratories.

A stakeholder meeting was held on 25th February 2020 (**Annex-3**) to get the views of them as

developmental partners. Representatives of BMARI and the Commissioner of Ayurveda were also invited for the meeting. Outcomes of the meeting were presented in Chapter 5.

Review team finalized the draft with all the factors obtained from various sources and forwarded to NASTEC on 22nd July 2020. NASTEC officials send their comments following the review of the submitted draft on 24th July 2020. The draft document was adapted with comments received after the agreement of both parties send to the BMARI and Representatives of Ayurveda Department for their observations on 30th July 2020. After 3 weeks of period, called upon a meeting to finalize the draft document. The meeting was hosted on 09th September 2020 by NASTEC and sponsored by BMARI (**Annex-2.2 Photographs**). All the stakeholders participated and had a detailed discussion to conclude the review report. Final report adopted based on all the concurrences received and officially handed over to the NASTEC for further activities.

3. MANAGEMENT ASSESSMENT

The ability of an institution to produce useful and relevant outputs depends on internal policies, strategies, management practices. The review team has evaluated the following aspects to identify causes that enhance the performance of BMARI.

- i. The institutional response to external and internal environment in planning organizational strategy and Master plan
- ii. Planning Science& Technology (S&T) Programs and priorities
- iii. Planning S & T/ Research and Development (R& D) Projects
- iv. Project management and maintenance of quality
- v. Human Resource Management
- vi. Management of organizational assets
- vii. Coordinating and integrating the internal functions, units and activities
- viii. Managing information dissemination and partnership
- ix. Monitoring, evaluation and reporting

Each management practice listed above has been evaluated with reference to the current performance of the BMARI and given the ranks according to the following table. These responses along with comments and shreds of evidence were used as a basis in evaluating the current status of the institution.

* **Management practices assessment**

(1) Always used/ always considered/ involved/analyzed	≡	Strong
(2) Occasionally used/ considered/ involved/analyzed	≡	Moderate
(3) Not used/ Not considered/ Not involved/Not analyzed	≡	Weak

i. **Assessment of Institutional Response to External and Internal Environment in Planning Organizational Strategy**

Management practice	Level of Practice (Performance Indicators)			Comments / Evidence
	Stron	Modera	Wea	
Government policies and development goals are used/ considered to establish goals and plan an organizational strategy for the institution			X	Poorly defined organizational structure. Annual action plan, targets, goals and activities not timely defined. No clearly defined Institutional Policy/Policies. Absence of National Indigenous Policy is highlighted. Not updated according to the Government policy directions relevant to the sector.
The organizational mandate (as specified by the relevant Act) is considered in strategic planning			X	There is no properly defined strategic plan align with the organizational mandate.
The institution is responsive to changes in Government policies and strategies			X	Since the strategic plan is not updated according to the available policy directions institution is not responsive to changes in government policies and strategies.

Factors such as strengths, weaknesses, threats and opportunities are considered in strategic planning			X	SWOT is weakly analyzed in the SER.
Stakeholders needs are taken into consideration in strategic planning			X	Stakeholders' needs are not considered in the self-evaluation report (SER).
Government allocations and alternative funding opportunities (donor funding) are considered in strategic planning			X	Government allocations and alternative funding opportunities (donor funding) are not considered in self-evaluation report.
The extent to which policies and plans of the organization are reviewed and updated			X	No reviewing or monitoring process for any institutional or personal activity was observed. This is the major bottleneck for sustainable development.

Additional observations:

- The Ayurvedic Department should take the lead to develop the Traditional Medicine Health policy (cited in National Policy Framework 2020-2025, 'Vistas of Prosperity and Splendour' Page 17).
- BMARI needs to develop its own Strategic Plan.
- Need to develop/revise the organizational structure and organogram providing hierarchical rank for the senior scientist and the two CMOs for hospital and OPD.

ii) **Planning S & T programs and setting priorities**

Program objectives should be consistent with organizational strategies and reflect user needs and development goals.

Management practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
National development goals are considered in planning programs & setting priorities			X	No annual action plan submitted, not align with the government priorities or not identified traditional medical sector priorities
The extent to which the staff of the institution participate in programme planning and priority setting			X	The staffs of the institution do not actively participate in programme planning and priority setting.
Stakeholder interests are considered in programme planning			X	No direct intervention and no stake holder meetings, do not have a list of stakeholders.

<p>The extent to which programmes are planned and approved through appropriate procedures</p>			<p>X</p>	<p>Few steps have been taken to have collaborations with partners like the institute of Nano Technology and Faculties of Medicine. Things went in the official channel but no established process or procedure for those partnering agencies observed.</p>
<p>The extent to which the availability of funds (government allocations and other funds) generating funds are taken into consideration in planning programmes</p>			<p>X</p>	<p>No direct involvement No direct Government allocations or no regular donor funding sources No vote allocation or planned breakdown of an expenditure in different sectors 1% of total health budget allocated to whole indigenous sector. No allocations for research grants or research allowances.</p>

<p>The obtaining of necessary equipment is considered in planning programmes</p>			<p>X</p>	<p>Since there is no properly designed strategic plan, obtaining necessary equipment is not considered in the SER. It is observed that decisions are taken by the total external authorities or the political appointees, therefore machineries and equipment are idling due to underutilization due to unavailability of trained human resources or assigned workload to the equipment. This has been done in an <i>ad-hoc</i> manner. Thus, no proper planning for effective use and sustainability.</p>
<p>The extent to which socio-economic and commercialization of aspects are considered in program planning.</p>			<p>X</p>	<p>It is observed that there is no socio-economic and commercialization of aspects considered in program planning.</p>

Effectiveness and efficiency of institutional procedures in approving new S& T programs.			X	<p>There is no evidence of the effectiveness and efficiency of institutional procedures in approving new S & T programs.</p> <p>It is observed that researchers make an effort to apply some procedures but not in a strategic manner.</p>
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- Additional observations:
- Change the name of the institution giving more weight to indigenous sector.
 - To rearrange the vision and mission according to the National Policy directions. Need to introduce KPIs and performance evaluation frameworks for each unit.
 - Need progress review meetings regularly in each month with the head of the institution and representative of the reporting authority.
 - Need to link with development committee meetings held regularly in the ministry of health (Health Development Committee meetings HDC/ National Health Development Committee meetings NHDC) or they can have their own meetings with only indigenous sector covering all indigenous medical sector institutions.
 - Establish the Planning unit, quality unit and information unit within the institution.

iii) Planning S& T / R& D Projects

Projects are the building blocks of programs. For an institution to achieve its objectives, it is necessary for projects to be well planned in terms of their expected outputs, activities, and input requirements.

Management practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The staff is provided with guidance for project planning			X	No proper plan for staff training and capacity building align with the institutional or country needs. The scope of the institution is not clearly defined. Need better leadership to identify the evidence-based needs.
Previous research results/data are used for planning projects			X	No data bank and Research repository or process to collect or store data accurately. No mechanism to re - analyse the data and act according to the evidence Therefore, previous
The extent to which the institution follows a formal process for preparation, review and approval of projects			X	Few committees are existing but no guidance, supervision or follow-up with experts, no reporting or evaluating authority. No grading system Not having collaborated with expert agencies in the field. Therefore, the review

The extent to which organizational plans (e.g. medium-term plan, corporate plan, strategy etc.) are used to guide project selection and planning			X	The team didn't observe medium term and co-operate plan in selecting projects.
Multidisciplinary projects/ activities are encouraged by the institutions			X	There are few multidisciplinary projects conducted but no clear outcome-based approaches are followed.
Foreign collaborations are encouraged and incorporated in planning.			X	No such foreign collaborations are encouraged and incorporated in planning.
Partnership with private sector is encouraged by the institution			X	Institution per se is not encouraging any partnerships. But individual partnerships are existing without having benefits to the institutional development. No PPP models identified to match with the BMARI mandate.

The extent to which development research/activities are considered in planning projects			X	Operational research studies not being taken into action or included in the policy decision process. There are no such mechanisms to accommodate research findings into the developmental activities.
The degree to which adverse effects on the environment are considered in planning projects			X	No such standards adhered (Ex: ISO standards)

Additional observations (if any)

- Need to develop multidisciplinary research projects with official collaborations.
- Should encourage PPP, Maybe with MOUs.
- Considered national requirement when planning research strategy.
- Develop foreign collaborations – maybe through WHO collaborative centres.
- Should Adhered standards (Ex: ISO).
- Need to have an institutional master plan align with government policies and acts.
- Need to collaborate with the Universities/Institutes with best practices in developing the PhD opportunities for the research candidates.
- Need to introduce annual research symposium or annual academic performance

conferences with collaborations within and outside the country.

- Need to get laboratory accreditations.

iv) Project management and maintenance of quality

Proper project management and quality assurance/improvement practices are needed to ensure effective research operations, the quality of output and achievement of desired objectives.

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The effectiveness of the procedures for resource allocation at different levels (organization, departments, program etc.)			X	No integrity It was observed that only the mutual agreement with the workload handling by each unit is taken into considerations in allocating resources.
Ensuring that instruments, equipment and infrastructure facilities are sufficient for implementation of projects	X			The instruments, equipment and infrastructure is underutilized as they are idling most of the time. Need to recruit technical staff to operate the instruments and capacity building of them to fit with current demand of the country. Scientific officers / Research staff should be recruited
The effectiveness of administrative procedures and support for project implementation (procurement and distribution of equipment and materials, transport arrangements, etc.)			X	No such mechanism yet implemented. Administrative support in project implementation is very poor Most of projects not implemented due to poor financial and technical incompetency.

Formal monitoring and review processes are used to direct projects towards the achievement of objectives			X	No such process was implemented. The review team is not observed a solid monitoring system of the institutional performance.
The extent to which the researchers are supported by the required technical / field staff.			X	No required trained technical and field staff. Need to train the technical staff in GMP, GLP and GCP. As the management did not identify the priorities, researchers do not have sufficient supportive staff.
Ensuring that established field / lab methods and appropriate protocols are used			X	The team did not observe any standard protocol or guidelines with the laboratories.
Research projects/ S& T activities are completed within the planned time frame.			X	Though No action plan. No such action plan or defined time frame. This institution does not align with a scope either.
Ensuring that scientists/researchers have access to adequate scientific information (scientific journals, internet, international databases, advanced research institutes, universities etc.) that strengthens the quality of research.			X	The institution does not provide such facilities for the scientists.

The extent to which quality assurance practices are followed by the institutions			X	No such mechanism. Quality and safety practices were there, but not having supervised by anybody, this could be linked with National quality secretariat or with ministry of Health quality secretariat. At least ISO (9001:2015) should be proposed to implement in 3 years' time.
Ensuring that researchers/scientists have access to computers and necessary software			X	Having audiovisual unit but not implemented virtual system among researchers. Computers, software and technical guidance or Information unit with competent employees need to be implemented.

Additional observations (if any)

- There are high-tech underutilized machineries in laboratories.
- Need proper training of technical and field staff including GMP, GLP and GCP.
- Need to implement virtual learning methods
- Need to establish more training courses for to develop a research culture.
- Expose outside researches to follow those training courses as an income generation activity.
- Implement collaborations and student exchange programs with benchmark research institutions.
- Budget allocations to the institution from a separate vote for research development.

v) Human Resource Management

Availability of an adequate number of qualified staff and effective management of human resources are key determinants of organizational performance. Establishing a cadre of qualified staff takes many years. To keep pace with new developments in science, technology, and management, it is also essential to upgrade staff regularly. Staff planning, selection, recruitment, evaluation, and training are key components of human resources management that need to be in place for the effective performance of an institution.

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The institution maintains and updates staff information in a database (including biodata, disciplines, experience, publications, projects)			X	No such database available. We propose a repository access to researchers and restricted access to public for the purpose of dissemination of information.
The institution, plans and updates its staff recruitments based on program and project needs			X	Review team was not observed such details about the projects carried out by BMARI. There were few interviews boards but no such data available.
The effectiveness of the selection procedures and the schemes of recruitment			X	The institutional recruitment process is not clear as the scheme is the general one for all under the Department of Ayurveda.

Training is based on institution and program objectives and on merit,			X	No such process. Training programs were conducted local and overseas but the selection criteria are not clear. The selection criteria for overseas training or fellowships could be defined for all staff categories.
The effectiveness of the procedures in promoting a good working environment and maintaining high staff morale.			X	Staff welfare programs have not been observed. Staff capacity building programs need to be organized in a proper manner covering all the categories.
The effectiveness of staff performance appraisals			X	Performance appraisal system is not developed. It needs to be updated according to the job category with identified Key performance indicators.
The effectiveness of rewards and incentive schemes in motivating the staff.			X	No such process.
The effectiveness of managing staff turnover, absenteeism and work interruptions.			X	Could not observe employee retention strategy.

Additional observations:

- All the medical officers served in their government regular framework.
- There should be a permanent appointment in the scientist grade.
- Need to establish human resource management and career guidance unit

vi) **Management of organizational assets**

Organizational assets include not only staff, buildings, equipment and finances, but also include assets such as knowledge, technologies developed, intellectual property, and even credibility and reputation. A continuous effort is needed to protect all of these assets because they are the basis for the sustainability of the institution and allow it to continue delivering quality research and service output.

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The ability of the institution to carry out its mandate and the assigned statutory powers			X	This institution does not have powers to work independently. Institute should be empowered sufficiently in order them to deliver.

<p>Infrastructure (buildings, stations, fields, roads) is satisfactorily maintained.</p>			<p>X</p>	<p>Very poorly maintained access road inside the institution, herbal garden was left neglected in most of the areas (only three personnel in the herbal garden) Administrative building also not maintained Maintenance was found to be a very difficult process with the existing setup as there is no maintenance unit</p>
<p>Vehicles and equipment (lab, field, and office) are properly managed and maintained.</p>			<p>X</p>	<p>Lab was very much underutilized, Offices do not have basic facilities like communication, fax and photocopies. Buildings are not maintained adequately. Vehicle fleet at BMARI are not utilized in effective manner.</p>
<p>The effectiveness of procedures to ensure that equipment are in working order</p>			<p>X</p>	<p>No procedure of maintenance as the workload is very less, machines are idling most of the time. No such proper process is in place, systematic staff training in this regard is needed.</p>

The effectiveness of the institution's overall strategy in the generation and proper utilization of funds			X	Funds supplied are grossly inadequate. Lots of potential for fund / income generation, but need policy and strategy required facilities set in place for commercial oriented projects. Eg. Testing services, new products, consultancy and training. 2018 only 77% of allocated funds have been spent.
The extent to which the institution identifies opportunities for income generation and cost recovery			X	Identified in few sections. But not focused on cost recovery.
The extent to which the intellectual property rights (IPRs) of the institute are protected.			X	No such mechanism and IPR act should include policy for TM.

Additional observations (if any)

- A separate maintenance unit and account section and internal audit system should be established.
- In IPR act policy for TM should be included.
- Need the change in institutional management; it has to be independent as an institute.
- Complete revision for vision and mission and mandate areas needed.

vii) **Coordinating and integrating the internal functions/ units/activities**

Planning and coordination of units (departments, divisions, committees, research stations, etc.) and interaction among them are often neglected and it affects the overall performance of the institution. The organization of these units and the overall structure need to be reviewed from time to time to ensure smooth and efficient operations. The planning and coordination of units, logistics, resources, and information flows are necessary to achieve integration and smooth functioning.

Management Practice	Level of Practice (Performance indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The extent to which institution is evaluated internally and restructured based on current needs			X	Could not observe an institutional evaluation process.
The effectiveness of internal communication and coordination			X	No properly defined internal communication and coordination mechanisms.
The institution's overall direction and coordination are provided by a central planning committee / unit.			X	No such planning committee was identified.
The extent to which different units are assigned clearly defined functions			X	No job description was found during the observational visit.

Responsibilities of research / management staff are clearly identified			X	Identified but need to develop TORs and performance indexes. No KPIs evaluated so far.
Effectiveness of using appropriate reporting procedures and feedback in management at different levels			X	No monitoring or evaluation unit to assess the feedback. The observed reporting procedure is not scientifically defined.

Additional observations:

- Need to develop a central planning committee.
- Need to develop job descriptions, TORs /SOPs performance indexes /KPIs.
- Need planning, monitoring and evaluation unit for smooth functioning of the institute.

viii) Partnership in managing information dissemination

An important requirement of all S&T / R & D institutions is management of dissemination of technology and information to users. The partnership / linking up with other sectors in Science & Technology and information system (including, universities, industries, private sector, international research organizations, extension, farmers etc.) promotes information exchange, collaboration, and cost-sharing, and ultimately improves the quality and relevance of research.

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The institution systematically plans and performs the dissemination of information			X	There is no systematic plan for the dissemination of information.
The extent to which the institution plans and maintains linkages with key partners for sharing and dissemination of information			X	As the BMARI does not have a plan to link with key partners for sharing and dissemination of information.
The effectiveness of institutional procedures for technology transfer			X	No sharing basis for any technology concerned with outside agencies and institutions.
The effectiveness of the system to obtain feedback from different types of stakeholders			X	Need to have quarterly or annually meetings with key stakeholders and development partners to do the monitoring and evaluation with assessment of the feedback.

Additional observations:

- Need to develop technology transfer mechanism and strong information dissemination method
- Need to implement traditional knowledge digital library (TKDL) like India
- Need to have information unit to look after the technology transferring and digital development and Internet of things in relation to indigenous technology development.

viii) Monitoring, evaluation and reporting procedures

Monitoring (assessing ongoing S&T / research activities) and evaluation (evaluating the value, quality and results of research) are key management processes of public-S&T institutions. Monitoring and evaluation are also important for determining whether the institution is learning from its earlier achievements and failures. Monitoring, evaluation, and reporting procedures need to be properly designed (i.e. integrated into project planning and implementation) and periodically reviewed, in order to provide useful information for decision-making and accountability.

Management Practice	Level of Practice (Performance Indicators)			Comments/ Evidence
	Strong	Moderate	Weak	
The institution monitors and evaluates (M&E) its own activities periodically			X	It is not being done so far, therefore need to organize performance monitoring regularly.
M&E is supported by an adequate management information system (MIS), which includes information on projects (e.g. costs, staff, progress, and Results).			X	No such mechanism.
The extent to which S&T results and other outputs are adequately reported internally (e.g. through reports, internal program reviews, seminars)			X	Could not observe standardised reporting system in reviewing the internal process.
External stakeholders contribute to the M & E process in the institution			X	No such mechanism to get the contribution of external stakeholders in M&E process.

The extent to which the results of M&E are used for project/ research planning and decision-making.			X	This is the evidence-based decision making with analysing the evaluation reports, there is no such mechanism for decision making and identifying research priorities
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<p>Additional observations:</p> <ul style="list-style-type: none"> • Need to develop internal monitoring system – no strategic and action plan. • Need internal auditory system. • Need to establish a monitoring and evaluation unit. • And also need an activity plan to activate the decisions taken following evaluation.

4. OUTPUT ASSESSMENT

The following output indicators have been measured together with the staff strength of the institute. The committee noted that only 172 cadre positions have been filled out of 288 approved cadres in the year 2018.

Types of outputs

- i. Technologies developed
- ii. Technologies transferred to industry/entrepreneurs
- iii. Information Dissemination / Extension
- iv. Research Publications
- v. Instrumentation
- vi. Services (Testing, Calibrations, Consultations, Advisory and etc.)
- vii. Health care services and clinics
- viii. Training
- ix. Patents

b) Output measurements

Output Category	Nos.	General Comments on quality and relevance of outputs and productivity of institution
<p>Technologies Developed New products / technologies</p> <p>Improved products / technologies / laboratory methods</p> <p>New planting materials / seed varieties</p>	13008	<p>No innovative products or services through research were observed. Not observed</p> <p>Medicinal plants have been produced in the herbal garden and distributed. Herbal Repository should be established. (Annex 1)</p>
<p>Standardization and quality control of Drugs</p>	28	<p>Quality control laboratory has done the standardization of herbal drugs</p>
<p>Technologies transferred to industry / entrepreneurs Technologies developed locally Foreign technologies adapted and transferred</p>		<p>Technology Transfer unit should be established. No collaborations with investors locally and internationally. No proper collaboration with private sector</p>

<p>Information Dissemination / Extension Publications S & T institutional review reports Training manuals Advisory leaflets</p>		Not Observed
<p>Maps Posters Dissemination events Workshops and seminars Conferences Exhibitions Media events Open days Demonstrations</p>		
<p>4. Publications Research papers in ISI journals Other research papers Conference proceedings Books and monographs</p>	30	SER
<p>5. Instrumentation</p>	-	Well-equipped pharmaceutical, analytical chemistry, molecular biology, botany laboratory has
<p>Services (Testing, Calibrations, Consultations, Advisory and etc.) Research grants awarded and administered Funding for training programmes and other S&T activities Monitoring of research projects Consultancy services Testing and analytical services</p>	08	None of the mentioned areas done in institutional level Need capacity building and trainer trainee programs for improvement Benchmarking with local and

Recommendations in S&T matters	19	foreign experts arranging fellowships in universities (Annex1)
7.Healthcare Service and clinics	20	More than 20 special clinics conducted and 7688 OPD (total 91233 in 2018) patients per month have been treated. (Annex 1)
	7688	
	3	The conductance of Clinical Research should be paid more attention. More staff needed for the hospital (annex 1)
8. Training		
<i>Staff training programmes</i>		
Local		
Foreign	14	
<i>Training programmes for stakeholders</i>	05	
9. patents	-	-none

- **Productivity of Institution based on outputs and S& T staff strength**

There are four categories of staff listed below with the actual number employed and cadre allocation in the year 2018.

2018	Approved	Actual	Projection for 2020
Senior level	77	53	Not done
Tertiary level	23	1	Not done
Secondary level	84	39	Not done
Primary level	104	79	Not done

It was observed that the institute has not taken necessary measures to carry out the output assessment following the productivity concepts in a transparent manner. Further, staff training has not been regulated to address institutional needs.

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership (UN: <https://sdgs.un.org/goals>). It is needed for considering sustainable development goals when running a research institute to achieve global accreditations and sustainable outcomes.

Currently, expectations for accreditation and external accountability are increasing and no longer sufficient for institutions to have assessment plans. Instead, institutions should strive to build a culture of evidence with examples of how assessment results are used to improve institutional goals.

Therefore, BMARI should target broader outcomes and embedding assessment into institutional processes such as;

- i. Securing support from the administrative leadership
- ii. Making resources available for and supporting the professional development of staff
- iii. providing a vision for assessment
- iv. Providing and encouraging space for discussion and collaboration
- v. Sharing information widely regarding assessment and results of assessment to both internal and external audiences.
- vi. Engaging more stakeholders.
- vii. Establishing more robust assessment of assessment processes or utilizing the already collected assessment data more effectively.
- viii. Becoming more transparent with assessment processes and results and with sharing promising practices externally.
- ix. Setting institutional priorities and strategic planning
- x. Informing institutional decision making
- xi. Incorporating results into accreditation efforts
- xii. Framing assessment at the institution level

- xiii. Revising institutional outcomes
- xiv. Enhancing collaboration across the country
- xv. Reflecting on assessment processes and institutional practices

5. OUTCOMES OF THE STAKEHOLDER MEETING

Stakeholder engagement refers to the process by which an organization involves people who may be affected by the decisions it makes or who can influence the implementation of decisions. Stakeholders may support or oppose decisions and may be influential in the organization or within the community in which they operate. In this regard, the BMARI Review Committee employed the stakeholder engagement method and the integration of their feedback to make recommendations of this paper practical. Following are the suggestions made by the majority of the group during the stakeholder meeting held on 25th of February 2020.

(Annex-3)

Most of the participants showed their interest in collaborative research work especially clinical research at BMARI. Further, some of them were interested in participating capacity building programs on IPR legislations in collaboration with COSTI and Ministry of Science and Technology. At the same time, they highlighted the significance of a system to promote contract or operational research as services. Participants strongly emphasized establishing quality and efficacy parameters for major Ayurveda and traditional medicine preparations and setting of standards for such products. As a group, they emphasized on a system to explore commercial benefits of collaborations with private sector and public sector institutions and those who engaged in similar industries.

A good researcher becomes a powerful scholar with frequent publications. Frequent research publications by an individual will result in increasing the researcher's credit. A number of recruiters, institutions, look for individuals who have done ample researches and published those in journals. The significance of research publications is immense. This aspect was broadly discussed during the discussion. Therefore, the participants highlighted the significance of encouraging the researchers to publish their papers in indexed journals. To encourage researchers

for quality research library faculties, access to the laboratory facilities of other government institutions and private partners and even a Research Management Committee was proposed in ensuring research governance.

Dissemination is the interactive process of communicating knowledge to target audiences. So that it may be used to lead to change. The challenge is to improve the accessibility of desired knowledge products by those they are intended to reach. This was one of the concerns of the participants. Therefore, it was proposed to conduct regular conferences and symposium in collaboration with public sector institutions and other partner organizations.

6. CONTRIBUTION TO THE NATIONAL DEVELOPMENT

Current Status

At present BMARI is mainly operating as a service providing organization to certain segments of the community through their hospital and clinic activities, and a limited number of services to industries on their request. With the existence of more six decades, remarkable new product or service which was commercialized or with a potential of commercialization could not be identified clearly. There may be some treatments developed through their research activities but could not find evidence of commercialization or getting any patents for these new inventions. A major limitation commonly observed in most of the research activities carried out at BMARI is the lack of adherence to a recognized system of scientific procedure, particularly in clinical studies. At present it is hardly found direct contribution to national economic development except for human resource developments (postgraduates) taking place through their research activities.

However, the Government has pledged to develop the Indigenous and Ayurveda System by allocating more money during the next five years, (cited in National Policy Framework 2020-2025 'Vistas of Prosperity and Splendour' Page 17) expecting the BMARI to take the opportunity to contribute to the national development. **(Annex-4)**

World Trend and Potential in Herbal and Alternative medicine

The Traditional and Alternative Medicine (TAM) market has been upgraded by increasing demand for natural alternative medicines. The constraint connected with conventional medicines is growing with the changes in lifestyle. The consumer approach of the health benefits of Traditional & Complementary Medicine is undergoing fundamental changes. The Traditional & Complementary Medicine industry has a boom in recent years. The potency of Traditional & Complementary Medicine in both health prevention and treatment has attracted investments from Western pharmaceutical companies as well as venture financiers. In China, Japan, Korea, Southeast Asia and the Asian societies in North America, the Traditional & Complementary Medicine market ranges from US\$6 billion to US\$20 billion depending on the source. With double-digit development in the past years and habitual over the next few years, and more and more studies on Traditional & Complementary Medicine appearing in first-class international magazines such as Nature, and the Journal of the American Medical Association, the World Health Organization (WHO) has projected that the global market for herbal products would be worth US \$5 trillion by the year 2050 (**Ref. 4. Source: Arman Zargaran (2020), 10th International Conference on Traditional Medicine- June 15-16, 2020 | Barcelona, Spain).**

The panel noted from the data given in the SER and Performance report the herbal garden and the nursery has produced considerable amount of raw medicinal materials for Ayurveda co-operation and also for research purposes and for general public According to the information there are only three (3) personnel to maintain this fifteen-acre land. Since it is an income generating centre the measures should be taken to increase the work force and to facelift the garden that would increase the production as well. (**ANNEX 1**)

BMARI with other relevant authorities needs to set up strong projects targeting this emerging market at the international level with a change of their current practice of research methodologies most of which are not recognized at the modern world scientific community, regulatory authorities and market. Focusing this a strong attitude and procedure change in research activities at BMARI is mandatory, particularly incorporating recognized systems of scientific procedure for Ayurveda and traditional medicine research.

Major Areas BMARI Can Focus to Deliver Commercial Outcomes to Local Market

- i. At present it is very difficult to identify products/services developed by BMARI available at the local market also, but there is an increasing demand for alternative treatments and therapies particular among tourist which can be focused to develop their own arm targeting this segment in collaboration with Sri Lanka tourist board.
- ii. BMARI should have much strong collaboration with Ayurveda drug manufacturing cooperation to introduce new products such as supplements, cosmetics and nutraceuticals other than conventional Ayurveda drugs.
- iii. Increasing demand for raw materials (medicinal plants) needs to be addressed by BMARI in collaboration with other line ministries such as agriculture as they have good experts on medicinal plant botany and good medicinal plant garden. These need to be converted to commercial operations.

Major Area BMARI Can Focus to Deliver to the International Market

- i. is Herbal Pharmaceuticals, a major demanding product segment that BMARI can focus to approach. At present Chinese TCM and Indian Ayurveda based products are dominating at the international market. Our Ayurvedic or traditional medicines in the current form cannot reach this market, BMARI in collaboration with other institutions such as ITI, SLINTEC, IFS, MRI should rapidly carry out development studies to upgrade and reformulate selected products to meet international specifications. Registration in respective authorities in USA and EU will also be in focus when designing research projects for the development of herbal pharmaceuticals.
- ii. Herbal Functional Foods and Dietary Supplements; This segment can be reached comparatively easier than herbal pharmaceuticals as regulatory requirements are less stringent. BMARI needs to focus new research approaches other than their conventional drug studies to develop concepts on herbal functional foods based on Ayurveda and traditional medicine knowledge.
- iii. Herbal Beauty Products; This sector has huge commercial potential even at the local market but no strategies have been developed to fulfill these demands.

Potentials of BMARI to Deliver Commercial Outcomes

- i. BMARI is the only government Research Institute dedicated to Research and development in areas of Ayurveda and traditional systems of medicines with all basic physical facilities including a dedicated hospital for clinical trials.
- ii. Qualified and trained Ayurveda doctors and involvement of traditional practitioners
- iii. Access to valuable traditional knowledge in Ola leaves book in BMARI Ola leaves library.
- iv. Modern analytical chemistry and biotechnology laboratory facilities available.
- v. Herbal garden and medicinal plant botanists available

Limitations of BMARI in delivering commercial outcomes targeting wider market including international market

- i. Inappropriate attitudes regarding research approaches in Ayurveda and traditional systems of medicines.
- ii. Unconducive system and micro-environment for novel commercial product/services-oriented research
- iii. Lack of focus on commercially oriented R&D outputs
- iv. Lack of adherence to the internationally accepted procedure in research and development particularly clinical studies.
- v. Very poor collaboration with other local institutions.
- vi. Almost no research collaboration with international agencies.
- vii. Logistic limitation for joint or collaborative research and development activities with the private sector

Insufficient awareness on modernizations concepts and market approaches of the herbal and alternative medicine sector.

7. RECOMMENDATIONS

BMARI is the only government research institute that is fully dedicated to Research Development and Innovations (RDI) in the areas of Ayurveda and other traditional systems of medicines in the country with a significant and very high potential to be among leading RDI institutions that can markedly contribute to the national economic development and social wellbeing. However, when elevating BMARI to its potential heights, significant improvements and adjustments in many segments are essential. Being a research institution, the institute should pay more attention to research and development rather than engage in routing standardization and quality control of the ayurvedic formulations. Researching on Ayurveda and Sri Lankan traditional medicine formulations should involve an integrated research team which consists of Botanists to identification and authentication the medicinal herbs used in the formulations and Chemists, Pharmacists and Biochemists to study chemical constituents, any acute / chronic toxic materials, formulations and improvements to be done for the formulations, to do the *invivo* activity and toxicity using animal models and finally Clinicians for evaluating the claimed efficacy of the formulations and side effects of the medicine. There are no such arrangements for integrated research at the moment. Based on the findings of this review, the review panel would like to suggest the following recommendations targeting the upliftment of BMARI's status, performance and prospect.

1. Providing autonomy to BMARI

It was evident from the review that the operations and performances of the institute have been significantly hampered mainly due to the lack of authority and power vested on the administrative position of the institute. Therefore, it is recommended to establish a board of management/governing council with a composition of relevant ministerial secretaries, eminent scholars in the field and certified practitioners in the country. The Director should directly report to the board of management /governing council.

2. Institutional policies and practices

As identified during the review, BMARI is an institute with a huge potential to be a key role player in national economic development programs. However, lack of policy directions in the sector at the national level and even within the institute, the focus of the institutional activities has been greatly scattered during the past hindering much of potential contribution. Therefore, the review panel would strongly propose a comprehensive sector review at the national level even with a review of the current act and subsequent policy formulation. Meantime Research Development and Innovation Policy (RDIP) for BMARI also should be formulated aligned with that of national policy. The BIJMARI does not have an organogram or clear structure of their employees. The position of senior scientist has never been filled. Immediately the institute should create four positions to lead the four divisions Pharmaceutical botany, Pharmaceutical chemistry & medicinal drug quality control division, Literary research division and Project division and also uplift the duties and the responsibilities of the two CMO. These six positions should not be on a rotation basis. This will immensely help to build up the research culture in the institution.

3. Financial Independence

This institute is totally dependent on Government of Sri Lanka (GoSL) Funds / Budget allocations. GoSL allocates the entire Indigenous Medical sector 1% of Health Budget and it is not defined clearly to what amount each indigenous institute get along a given financial year. It was also not identified the priority of the institutes with regard to the distribution of allocation. As there is no clear amount of allocation for the institute, they further stagnated without an annual action plan. Also, there is no other funding agencies (WHO/WB/ADB) associated with the functions of BMARI. This is a serious setback and a major cause for poor performance of the institute. Therefore, the review panel suggests establishing a separate institutional Finance Division with Director / Finance (or Accountant) to secure the annual budget directly from the treasury.

4. Corporate Plan

It is strongly proposed to initiate a proper program for the formulation of a corporate plan for BMARI with a strategic and time-bound action plan as early as possible in consultation with divisional levels and direct stakeholders. BMARI may seek assistance from relevant institutes or professionals in this regard. Further, it is important to establish a procedure to ensure proper

contribution and involvement of the staff at all levels including clinical and hospital staff for the development of an appropriate action plan.

5. Planning and implementation unit

During the review, the panel found gaps in the planning and implementation activities of the institute. Thus, the panel would recommend the establishment of a central research planning and implementation unit at BMARI. The BMARI may seek assistance from the National Planning Department (NPD) for this establishment. The said unit should consist of experienced scientists, a team of experts in the planning of infrastructure and finance, forecasting and guiding research and development projects.

6. Monitoring and evaluation

During the reviewing of the monitoring, evaluation and reporting procedures adopted by the Institute, the review panel observed that the functions of BMARI were not monitored or evaluated with proper monitoring tools. Even much weak management of organizational assets viz: herbal garden and building management were observed during the visit. Therefore, it is recommended to initiate the monitoring and evaluation process for the administrative, financial, clinical, Research and Development activities. It should be conducted regularly using accepted tools.

7. Recruitment of staff to BMARI

Under Human Resource Management, the team assessed the availability of an adequate number of qualified staff and effective management of human resources in the institute. Based on the assessment conducted, the panel recommends the Director should be preferably from the Ayurveda sector with strong research background. The current rotation of staff from the Department of Ayurveda should be restricted and permanent scientists should be appointed together with sufficient number of technical officers. The number of scientific staff at BMARI is grossly inadequate for the smooth functioning of the activities planned. Though the cadre provisions have been increased yearly the most of the key positions were filled using the rotation staff within the ayurvedic department. The current number of technical staff and the expected numbers are given below.

Staff category	2016		2017		2018	
	Approved	Actual	Approved	Actual	Approved	Actual
	Senior level	57	35	67	43	77
Tertiary level	40	15	23	01	23	01
Secondary level	60	18	84	39	84	39
Primary level	261	148	278	162	288	172
Total						

Source: Annual Performance Reports of the Department of Ayurveda

8. Integrated research teams

Herbal drugs quality control and standardization is technically a complicated process which requires a range of advance analytical tool and techniques as most of the ayurvedic formulations are mixtures of several different plant materials, minerals and/or animal products. As herbal drug quality control and standardization are one major RDI area of BMARI, a multidisciplinary approach with the involvement of plant scientists, chemists, pharmacists, and clinicians should be encouraged to achieve the objective. The BMARI provides the routing service for identification and authentication of raw materials used for different formulations at the Ayurvedic co-operation. Less than ten animal studies and efficacy of traditional and ayurvedic research have been conducted with the collaboration of different institutions. (ANNEX 1) collaborative research projects with the private sector are almost none. The institute should take immediate action to conduct research on the native and Ayurveda formulae. Since there is a belief / myth that the ayurvedic formulations are hepatotoxic and nephrotoxic, the BMARI should initiative to conduct such research to investigate the herbal formulations for their respective toxicities. However, the number of research and the identification and authentication of raw materials, we strongly recommend the institute should formulate research teams comprise of all the relevant scientists to embark on this line. One of the major draw-back for not having a research culture at the BMARI is the unavailability of Senior scientist to head the four units given below

- i Pharmaceutical botany

- ii. Pharmaceutical chemistry & medicinal drug quality control division
- iii. Literary research division and
- iv. Project division

Currently, these positions are not filled and look after by senior medical officers who are on a rotation basis from the Ayurvedic department. And also, the hierarchy of this position is not depicted in the draft organogram of the institute. We recommend the senior scientist to head these four units should have relevant basic degree with post-graduate degrees with a proven research background.

9. Clinical and Management protocols

The review panel was unable to come across the protocols and guidelines in each unit. It is recommended to develop / revise protocols and guidelines for each unit and made them available for clinical and research work in each section. It was revealed that the clinical research has not been coordinated well. The CMOs at the hospital and OPD should be a senior ayurvedic physicians with postgraduate qualifications in clinical research. These two positions should be made permanent. The panel strongly recommend to conduct real clinical trials on established ayurvedic and native medicine formulations to establish its clinical efficacy. At the moment only special clinics are being conducted but not clinical trials. (ANNEX 1)

10. Annual conference and institutional review meetings

As identified by the panel, managing information dissemination by the institute has to be strengthened. At the same time, BMARI do not follow a systematic way of disseminating the research data, through an annual research conference or annual research journal. Therefore, it was strongly proposed to initiate those activities for the motivation of researchers. Annual institutional performance review meetings and management meetings with stakeholders need to be regularized to get the funding opportunities with evidence of performance. The establishment of an International Research Collaboration unit is a must as there is an urgent need to start benchmarking global experiences and knowledge sharing with stakeholders and other organizations.

11. Ethics Review Committee (ERC)

In the review, the panel observed the absence of ERC within the BMARI and difficulties in getting ethical clearance for RDI projects which were conducted at BMARI. Therefore, to enhance the quality and quantity of clinical research at BMARI and enabling them to publish in reputed peer-review journals, the panel strongly recommends establishing an Institutional Research Ethics Review Committee with the approval of the Ministry. Further, it is important to form a unit or a special committee to handle related legal matters including MOU, agreements and intellectual property rights.

12. An Audit System for Administrative, Operational and Research Activities

The panel did not observe any auditing systems at BMARI for assessment and improvement, therefore it is recommended to establish an auditing system for the research projects, finance management and all the relevant functions carried out in BMARI.

13. Quality and Safety unit

Need the biosafety laboratory facilities to function the microbiology section and to conduct the testing. Quality assurance needs to be established in all the activities and tests conducted. They should expand the current quality-control tests and standardization of drugs and start new projects with the Private sector. Like the National Medicines Regulatory Authority (NMRA) where they control allopathic medicine, the BMARI as the sole research institute for traditional medicine should do the quality analysis on available drug formulations in the country.

14. Restructuring the BMARI

The Sri Lankan Ayurvedic tradition is a mixture of the Sinhala traditional medicine, Ayurveda and Siddha systems of India, Unani medicine of Greece through the Arabs, and most importantly, the Desheeya Chikitsa, which is the indigenous medicine of Sri Lanka. During the review on planning S & T programs and setting priorities, Panel observed several gaps in developing the sector and especially in promoting local wisdom relevant to the sector. Thus, the Team would like to propose to rename the institutional name considering the national identity of indigenous Medicine. Further to revisit the existing name of the institution as Ayurveda does not cover all the traditional /

indigenous medicine systems practiced in the country. Since the government has pledged to develop the traditional medical system by establishing a separate university etc. in 'National Policy Framework 2020-2025' 'Vistas of Prosperity and Splendour' (**annex 4**), it would be recommended to restructure the institution and affiliate the BMARI to the University as its research counterpart.

ANNEX- 1

කාර්ය සාධන වාර්තාව
செயலாற்று அறிக்கை
PERFORMANCE REPORT
2018



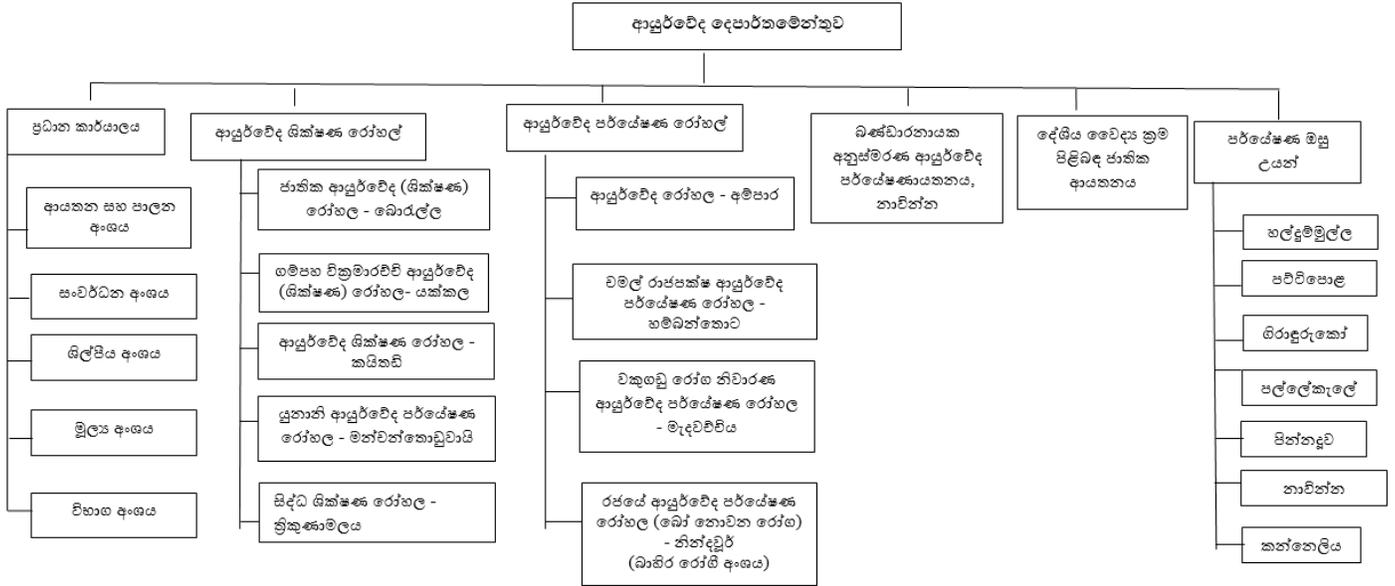
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ஆயுர்வேத திணைக்களம்
DEPARTMENT OF AYURVEDA

Sections relevant to
BMARI are given below.

Organogramme of the ayurvedic Department. BMARI has not developed its own Organogram.

Page 3 of performance report 2018.

1.6 ආයතන ව්‍යුහය



Bandaranayake Memoriyal Ayurvedic Research Institute

1 - 2507 40.Mn

Pages 50-55

Object code	Activity/Project	Expected output/outcome	Expenditure as at end of year 2018 (LKR)Mn	Physical Progress
4-2507 a)	Assessing the toxicity effect of common herbal formulas used in prameha.(Rats study) Collaboration with university of Ruhuna.	completed Research	1980.00	completed Research
b)	Assessing the toxicity and therapeutic effects of common herbal formulas used in prameha. (Diabetic induced mice study) Rajarata	Stand to induce the mice pre trials done. Now one large group is started to induce the diabetic melliiyns.	175,000.00	Still research in ongoing medicines need to supply more chemicals of streptozotocin need to continues the research still research grant is current research activities.
c)	Assessing the Anti-glycation activity of commonly used Ayurveda formula for prameha. Collaboration with university of Rajarata		69,866.00	Still not complete the research. After done this research can be fine the hoe these drugs active for the glycation.(Still research is ongoing. Work shops have be conducted.)
d)	Assessing the anti-oxidant activity and drug standardization of commonly used Ayurveda formula for prameha Collaboration with university of Peradeniya		35,000.00	Still research is ongoing. Work shops have be conducted. Chemical need in internally

e)	<p>1. ඔසු උයන සංවර්ධනය</p> <p>2. The investigation of morphoanatomical variation recorded in Sri Lanka</p> <p>3. මානව උද්භිද විද්‍යා සමීක්ෂණය දොළකන්ද රක්ෂිතය</p> <p>4. දශාංග හා පිප්පලයාසවය සඳහා යොදා ගන්නා අමුද්‍රව්‍ය</p> <p>5. පටක රෝපණ පර්යේෂණ (කැහිපිත්ත ශාකය නාලස්ථ ගුණය අධ්‍යයනයන්)</p>	<p>Sida(බැබිළ) විශේෂ 7 ක් නිවැරදිව හඳුනා ගැනීම</p> <p>තර්ජනයට ලක්ව ඇති ඖෂධීය ශාක සංරක්ෂණය</p> <p>ශාක විශේෂ සංඛ්‍යාව 155 ක් නිදර්ශක සකසා ඇත.</p> <p>ප්‍රමිතියෙන් යුතු ඖෂධ නිෂ්පාදනය.(2018 අවසන් භාගය)</p> <p>අධ්‍යයනය අවසන්</p>	46,250.00	<p>අවශ්‍ය ප්‍රතිපාදන හා ප්‍රමාණවත් සේවක සංඛ්‍යාවක් නොමැති වීම හේතුවෙන් අවශ්‍ය ඉලක්ක කරා ළඟා විය නොහැක. (10%)</p> <p>35%</p> <p>25%</p> <p>25%</p> <p>60%</p> <p>2020 ක්‍රියාකාරී සැලැස්මට අනුව පර්යේෂණ කාර්යයන් කිරීමට නොහැකි විය.</p> <p>පටක රෝපණ විද්‍යාගාරයේ වායු සමීකරණ යන්ත්‍රය හා Laminar air flow යන්ත්‍රය අක්‍රීය වීම හේතුවෙන්)</p>
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f)	1. Pathology laboratory	10,687 (Report)	-	1. ISE Smart light අළුත් වැඩියා කිරීම හා සේවා ගිවිසුම් ඇති කිරීම.
	2. Investigation			2. Binocular Microscope ඇණවුම් කර ලබා දීම. 3. 24 buckets centrifuge ඇණවුම් කිරීම. 4. Immunology Analyzer BS – 200, BC -5300, Incubator , Hot air oven, ultra pure system, water distillation unit වලට 2019 වර්ෂයේ සේවා ගිවිසුම් ලබා දීම.
g)	<p>සාහිත්‍ය පර්යේෂණ</p> <p>* 564;363;139;369 – 2016 අවසාන කාර්තුවේ සිට</p> <p>* 489;574;06;35 – 2017/2018</p> <p>දරණ පුස්තකාල පොත් අනුලේඛණය කිරීම.</p> <ul style="list-style-type: none"> ➤ 363 පුස්තකාල ග්‍රන්ථයේ සඳහන් වටිනා ප්‍රකරණයේ සඳහන් නොවන ගුලි කල්ක පිළිබඳ සාහිත්‍ය විමර්ශනය ➤ 564 පුස්තකාල පොතෙහි පමණක් සඳහන් වූ පිළිබඳ සාහිත්‍ය විමර්ශනය 	ඉපැරණි වෙදදුරු ඔසු නැණ ග්‍රන්ථය ප්‍රකාශනය සඳහා සුදානම් කිරීම.	-	65%

h)	Conducting new research standardization of Pippalydsawaya – Poly herbal drug		-	<p>ඖෂධය සෑදීම සඳහා අවශ්‍ය අමු ද්‍රව්‍ය (ශාක) දිවයිනේ විවිධ ප්‍රදේශ වලින් රැස් කිරීම.</p> <p>ඒ සඳහා අවශ්‍ය අනෙකුත් නිෂ්පාදන උපකරණ සඳහා මිල ගණන් කැඳවීමට කටයුතු සිදු කරමින් පවතී.</p>
i)	Purchase of Laboratory equipment for Standardization		-	<p>උපකරණ ඉල්ලුම් කර ඇත. මේ වන විට උපකරණ මිලදී ගැනීම සඳහා වන තාක්ෂණික ඇගයීම් කමිටුවේ නිර්දේශය සඳහා යොමු කර ඇත.</p>
j)	Purchase of chemicals and standards for research		-	<p>රසායන ද්‍රව්‍ය ලැයිස්තුවක් ඉල්ලුම් කර ඇත.</p> <p>MS-MIS ව්‍යාපෘතිය මගින් එම රසායන ද්‍රව්‍ය වලින් කොටසක් (ඒ හරහා ලබා ගත හැකි) ලබන වසර සඳහා ඉල්ලුම් කර ඊට ඇතුළත් කර ඇත. අනෙක් රසායන ද්‍රව්‍ය සඳහා තාක්ෂණික ඇගයීම් කමිටුවේ නිර්දේශය සඳහා ඉදිරිපත් කර ඇත.</p>
k)	Purchase of glassware for research		-	<p>ඉල්ලුම් කර ඇත. සැපයුම් අංශයේ තාක්ෂණික ඇගයීම් කමිටුවේ නිර්දේශ සඳහා ඉදිරිපත් කර ඇත.</p>
l)	Purchase of for high tech equipments such as HPLC/ICP ms GC-MS microwave digester.		-	<p>ICP-MS උපකරණය සඳහා අවශ්‍ය Argon gas සිලින්ඩර් 8 නැවත පිරවීම සඳහා ඉල්ලා ඇත.</p> <p>නමුත් මේ වන විට එය සැපයුම් අංශයේ අදාළ කටයුතු සඳහා යොමු කර ඇති බව දන්වා ඇත.</p>
m)	Maintenance and service of laboratory equipment		-	<p>HPLC, ICP-MS හා Microwave digester උපකරණ සඳහා වාර්ෂික</p>

				<p>නඩත්තු ගිවිසුම් ඇති කර ගන්නා ලදී.</p> <p>*Nitrogen Analyzer ,Freeze drier micro balance, Uv spectrophotometer හා rotary evaporator යන උපකරණ 5 සඳහා ද වාර්ෂික නඩත්තු ගිවිසුම් ඇති කර ගැනීම සඳහා අවශ්‍ය ලියකියවිලි දෙපාර්තමේන්තුව වෙත යොමු කර ඇත. මේ වන විට එහි අනුමැතිය සඳහා ප්‍රසම්පාදන කමිටුව වෙත ඉදිරිපත් කර ඇති බව දැනුම් දී ඇත.</p> <p>*ICP-MS උපකරණයේ අළුත් වැඩියා කටයුතු සිදු කර ගැනීම.</p>
n)	Purchase of spare parts for high tech equipments such as HPLC,ICP-MS ,GS-MS Microwave digester		-	<p>අමතර උපාංග ලැයිස්තුවක් ඉල්ලා ඇත. මේ වන විට එම ලැයිස්තුව තාක්ෂණික ඇගයීම් කමිටුවේ වාර්තාව හා නිර්දේශ සඳහා යොමු කර ඇත.</p> <p>Microwave digester උපකරණ සඳහා vessels 02 ක් මිලදී ගැනීම සඳහා අනුමැතිය ලබා දී ඇත.</p>
o)	බාහිර රෝගී අංශයේ වැසිකිළි පද්ධතිය නවීකරණය කිරීම.	-	1,279,783.25	-
p)	වාට්ටු අංක 04 වැඩි දියුණුවට කොටස් වෙන් කිරීම. ස්කෑන් යන්ත්‍රය ස්ථාන ගත කිරීම.	-	288,510.00	-
q)	බාහිරාංශයේ අනතුරු දායක තාපීය කොටස අළුත් වැඩියාව.	-	615,352.10	-
r)	බාහිර රෝගී අංශයේ ආපනශාලා ගොඩනැගිල්ල අළුත් වැඩියාව.	-	3,413,096.50	-

s)	වැසිකිළි වළවල් කඩා ඉවත් කර පස් පුරවා නැවත සැදීම. අපවිත්‍ර ජල වැංකි හා නල නැවත සැදීම.	-	7,287,900.00	-
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2.13.6 ඔසු පැළ නිෂ්පාදනය හා අලෙවි කාර්යයන්

අනු අංකය	ඔසු උයන	නිෂ්පාදනය කළ පැළ සංඛ්‍යාව	පැළ අලෙවි ආදායම	
			පැළ ප්‍රමාණය	වටිනාකම (රු.)
1.	පින්තදූව	16,379	7,488	373,895.00
2.	පට්ටිපොළ	3,661	1,219	52,260.00
3.	පල්ලෙකැලේ	18,929	15,486	49,070.00
4.	හල්දුම්මුල්ල	28,388	11,834	459,200.00
5.	නාවින්න	5,533	7,899	353,830.00
6.	ගිරාඳුරුකෝට්ටේ	31,174	2,495	86,840.00
	එකතුව	104,064	46,421	1,816,095.00

2.13.7 නිෂ්පාදනය කළ රෝපණ ද්‍රව්‍ය.

නාවින්න ඔසු උයන							
1.	කිරිපළ	-		-	-	√	ඔක්තෝම්බර් - නොවැම්බර්
2.	නා	-	√	-	-	√	සැප්තැම්බර්
3.	මාදං	-	√	-	-	√	සැප්තැම්බර් - ඔක්තෝම්බර්
4.	බුළු	-	√	-	-	√	මාර්තු - මැයි
5.	දොඹ	-	√	-	-		ජූනි - අගෝස්තු
6.	මුණමල්	-	√	-	-	√	ජූනි - ජූලි
7.	ලෝලු	-	√	-	-		ජූලි

2.13.9 ඔසු උයන් වලින් නිකුත් කර ඇති / අලෙවි කර ඇති අමුද්‍රව්‍ය

නාවින්න					
1.	අරළු	-	√	29.7 Kg	නාවින්න ආයුර්වේද ඖෂධ නිෂපාදනාගාරයට නොමිලේ සැපයීම
2.	බුළු	-	√	210 Kg	
3.	නෙල්ලි	-	√	2.650Kg	
4.	දොඹ	√		12 Kg	

2.13.10 ඔසු උයන් මගින් ලබා දෙන සේවාවන්

අ) ප්‍රකාශන හා පොත්පත්

අනු අංකය	ඔසු උයන	ප්‍රමාණය	ආදායම
1.	පින්තදුව	110	1100.00
2.	පල්ලෙකැලේ	23	230.00
3.	හල්දුම්මුල්ල	80	800.00
4.	නාවින්න	31	310.00
	එකතුව	244	2440.00

2.18 නොමිලේ පැළ/ අමුද්‍රව්‍ය නිකුත් කිරීම් පොත් අගය

අනු අංකය	ඔසු උයන	නොමිලේ පැළ නිකුත් කිරීම්		ඔසු උයන් අතර පැළ හුවමාරුව	
		ප්‍රමාණය	වටිනාකම (රු.)	ප්‍රමාණය	වටිනාකම (රු.)
1	පින්තදුව	36,623	109,930.00	-	-
2	පට්ටිපොළ	2,031	68,800.00	1,381	44,930.00
3	පල්ලෙකැලේ	7,631	2,35,110.00	-	-
4	ගිරාදුරුකෝට්ටේ	6,079	195,450.00	-	-
5	නාවින්න	6,258	202,970.00	-	-
6	හල්දුම්මුල්ල	8,047	243,310.00	-	-
	එකතුව	66,669	1,055,570.00	1,381	44,930.00

නාවින්න ඔසු උයන		
BACC ව්‍යාපෘති	107	11,050.00
ඔසු ගොවි වැඩසටහන	86	3,560.00

2.8.2 ප්‍රමිතිකරණවස්තූ (page 57)

වස්තූපදය	වස්තූවලට දුන් ආයතන ය
1. විසලීම් ඔප්පු කිරීමේ ගැනීම - 2018 වර්ෂය සඳහා වන තාක්ෂණික ඇගයීමේ කමිටුව විසින් ව්‍යාප්ත කරන ලද සාමාජිකයන්ගේ පල සඳහා අදාළ ප්‍රමිති වාර්තා ලබා දීම.	තාක්ෂණික ඇගයීමේ කමිටුව ආයුර්වේද වදාපාර්තමේන්තුව
2. ගබඩා වහර හා ජවන ලද අමුද්‍රව්‍ය පරීක්ෂාව.	ගබඩාව ආයුර්වේද පරීක්ෂණය කතය
3. ඖෂධ නිෂේධනාගාරය හරහා ජවන ලද නිෂේධන පරීක්ෂාව.	ඖෂධ නිෂේධනාගාරය ආයුර්වේද පරීක්ෂණය කතය
4. ශිලීය අංශය මගින් ව්‍යාප්ත කරන ලද සාමාජිකයන්ගේ පල සඳහා පරීක්ෂණ වාර්තා ලබා දීම. (2018.03.19)	ශිලීය අංශය, ආයුර්වේද වදාපාර්තමේන්තුව
5. ඖෂධ සංස්ථාව මගින් ව්‍යාප්ත කරන ලද පැහැරීම් වල සාමාජිකයන්ගේ පල සඳහා නේමේ වාර්තා ලබා දීම. එම ආයතන වෙබ් පිටුවක කනට්ටු සාමාජිකයන්ගේ පල සඳහා නේමේ වාර්තා ලබා දීම.	ඖෂධ සංස්ථාව, නාවින්න
1. වද්ගීය වචන දියවිදා ආයතනය විසින් එම ආයතන වෙබ් පිටුවක කනට්ටු සාමාජිකයන්ගේ පල සඳහා TLC වාර්තා ලබා දීම. (2018.09.25)	වද්ගීය වචන දියවිදා ආයතනය, කතය,

2.9.2 ඖෂධීය අමුද්‍රව්‍ය පරීක්ෂාව (Page 62)

පර්චේෂණ කාර්යය/පරීක්ෂා කළ අමුද්‍රව්‍ය	විස්වාචල බාදුන් ආයතනය	
	අභ්‍යන්තර	බාහිර
01. අමුද්‍රව්‍ය 37	මධුචේභසායනය	-
02. අමුද්‍රව්‍ය 15	පිළිකා සායනය	-
03. අමුද්‍රව්‍ය 53	සූප්‍රයෝගය	-
04. අමුද්‍රව්‍ය 67	ගබඩාව	-
05. අමුද්‍රව්‍ය 03		-
06. විවේචන 12	-	Kothalawala Academy
07. විවේචන 05	-	Medical Faculty - Kelaniya
08. විවේචන 01	-	National Science Foundation
09. විවේචන 02	-	Wickramarachchi - Gampaha
10. විවේචන 10	-	Horizon Campus
11. විවේචන 08	-	University of Colombo
12. විවේචන 03	-	University of Sri Jayawardhanapura
13. විවේචන 63	-	Venture Maric International (pvt)Ltd.

Annex-2.1



Meeting with senior officers of BMARI, at the BMARI Navinna

Annex-2.2



Meeting with senior officers of BMARI, at the BMARI Navinna

(Annex-3)

Stakeholders /collaborators for BMARI invited for the stake holders meeting

1. Commissioner, Department of Ayurveda
2. Ayurvedic Medical Council, Chair or Nominee
3. Ayurvedic Research Committee Chair or Nominee,
4. Ayurveda Formulary Committee, Chair or Nominee
5. Provincial Commissioner of Ayurveda, Western province
6. Institute of Indigenous Medicine University of Colombo, Director or Nominee
7. Gampaha Wickramarachchi Institute, University of Kalaniya, Director or Nominee
8. Post Graduate Institute of Indigenous Medicine, University of Colombo, Director or Nominee
9. Siddha Institute, University of Jaffna, Director or Nominee
10. Research Institutes (MRI), Veterinary Research Institute Gannoruwa, ITI) Director or Nominee
11. Ministries (Ministry of Agriculture, Ministry of Science and Technology, Secretary or Nominee
12. Ministry of planning and National policy, Secretary or Nominee
13. National Science Foundation NSF, CEO, Nominee
14. Ayurvedic Drug manufactures (Link, Sidhalepa, Nuwaraosu, Baraka etc.)
15. Ayurveda/Traditional physicians
16. General public and Interested Groups , NGOs- WHO

(Annex-3)

පාර්ශවකරුවන්ගේ සඳහා ප්‍රශ්නාවලිය
Questionnaire for stakeholders

1. පාර්ශවකරුවන්ගේ ආයතනය / ඒජන්සිය / ගෙපාර්තමේන්තුව / පීඨය / පුද්ගලයාගේ නම:
Name of the stakeholder institute/ Agency/ Department/ Faculty/ individual:

.....
.....

2. ඔබ/ ඔබගේ ආයතනය ඊළු කරනා කාර්යයන්: ලො: පර්ගේෂණ කටයුතු / උපයාන විද්‍යාව / උද්භිද
රසායන විද්‍යාව / ඖෂධ උපාදානය යනාදිය.

Assigned involvement: Eg: Research work/ Horticulture/ plant chemistry / drug Development
etc.

.....
.....

3. නම:.....

Name:

4. සේබන්ධතාගතාරුරු: දුරකථන / විද්‍යුත් තැපෑල:

.....

Contact Details: phone/email:

.....
.....

දිනය පුද්ගලයාගේ අත්සන / නිගයෝජිතයා

Date::..... Signature of the person / Representative

I. බණ්ඩාරනායක අනුස්මරණ ආයුර්වේද පර්ගේෂණ ආයතනය (BMARI) සමඟ ඔබගේ/ ඔබගේ
ආයතනගේ ඇති සේබන්ධතාවය කුමක්ද?

What is your involvement with the Bandaranaike Memorial Ayurveda Research Institute
(BMARI)

.....
.....

II. ඔබ BMARI සමඟ ගතවන්නා කාලයක් වැඩ කරනවාද?:

.....

Since how long you are working with BMARI

III. ඔබ කරන වැඩ සමඟ BMARI හි තත්වය විස්තර කරන්න (ලො: ඖෂධ නිෂපාදන
අමුද්‍රව්‍ය සැපයීම / පර්ගේෂණ / ඖෂධ සංදයෝජන සැකසීම)

Annexure-4

The National Policy Framework Vistas of Prosperity and Splendour

“The National Policy Framework Vistas of Prosperity and Splendour” published by the Ministry of Finance, Sri Lanka has identified 10 key sectorial policies that includes A Productive Citizen and a Happy Family covering Indigenous and Ayurveda system as a sub- sector. The subsector Policy Component is to uplift these systems through a more scientific and modern approach. Two of the activities are directly relevant to the activities of BMARI Viz. Encourage research on indigenous drugs and treatment facilities and establish mechanism to register them, steps taken to update Ayurveda pharmacopeia. The BMARI can play A major role to realize the above tasks.

Sub- Sector	Sectoral Policies and Policy Component	Strategies	Activities
		Spend entire government funds on health for citizens of Sri Lanka	<ul style="list-style-type: none"> Restrict to provide government healthcare facilities on free of charge for foreigners
Indigenous and Ayurveda System	Uplift these systems through a more scientific and modern approach.	Increase annual allocation for Indigenous medicine sector	<ul style="list-style-type: none"> Establish a National indigenous Medical council and Sri Lanka Medical Ayurveda Council. In addition, develop a system to register traditional healers (Weda Mahathmayas) as indigenous doctors Provide necessary facilities to improve Ayurveda hospitals to a standard level, provide preventive care facilities and to provide facilities to Ayurveda physicians Encourage research on indigenous drugs and treatment facilities and establish mechanism to register the same. Provide facilities to cultivate all medicinal plants, herbal gardens and provide facilities to manufacture and export herbal cosmetic products Upgrade institute of medicine to a level of Ayurveda University Steps taken to update Ayurveda Pharmacopeia. Develop a mechanism to cater tourists for Ayurveda, Siddha, homeopathy and other traditional treatment methods

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1. Ayurveda Act. Of 1961
2. Buddhadasa, K. (1910). *Saratha Sangrahaya*. P.C. Gunasekera.
3. Leipzig. (1996). *Sri Lanka country report to the FAO international technical conference on medicinal plant conservation*. Plant genetic Laboratory and Genebank, Leipzig. Germany: Leipzig.
4. Arman Zargarán (2020), *10th International Conference on Traditional Medicine*- June 15-16, 2020, Barcelona, Spain