

Consolidated details of PQ answered by the Institute during February 2020 to October 2020

**Subject: Reply of Parliament Question No. 6000**  
**Ref: Your E-mail dated 27 Feb. 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Meenakshi Singh,

Kindly refer E-mail dated 27/02/2020, regarding Lok Sabha Question No. 6000, I am directed to submit the desired information as under:

Sr. No.	Question	Reply
a)	whether the Government is exhorting scientists to work & concentrate and find solutions on the real time social issues being faced by the country such as malnutrition and to work to improve quality of life of the common man.	<b>Yes</b>
b)	If so, the details thereof;	<p>CSIR-NBRI is running a DBT-sponsored project entitled "Poverty alleviation through popularization of locally available dietary plants for preventing malnutrition among the SC/ST children and women" in which conducting training programs to combat malnutrition among the SC/ST population of the villages of Lucknow and Barabanki Districts to improve the quality of life by promoting the cultivation of locally available medicinal plants such as Sahjan, Ragi and Shatavari.</p> <p>Apart from above in this direction, some of the projects has been proposed and are under consideration for funding, e.g:-</p> <ol style="list-style-type: none"><li>1. Fe and Zn bio-fortification in rice through integrated microbial and soil nitrogen management in crop field.</li><li>2. Screening of wild edible plant for nutraceutical and their ex-situ conservation.</li></ol> <p>Besides malnutrition, CSIR-NBRI is also working on the farm based S&amp;T intervention for socio-economic</p>

		development in the aspirational district of Nabrangpur, Orissa.
c)	Whether the Government proposes to set up virtual labs to take science to the reach of students in every corner of the country to strengthen Scientific acumen among them; and	Nil Information
d)	If so, the details thereof;	NA

**Subject: Reply of Rajya Sabha Question Diary No U2878**

**Ref: Your E-mail dated March 06, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Goyal,

Kindly refer E-mail dated March 06, 2020, regarding **Rajya Sabha Question Diary No U2878**

I am directed to submit the desired information as under:

<b>S. No.</b>	<b>Rajya Sabha Question Diary No U2878</b>	<b>Response/Reply from CSIR-NBRI</b>
(a)	The number of Ayurvedic medicines produced in India which got patent	CSIR-NBRI have developed Two Ayurvedic medicines: 1) NBRMAP (BGR-34), cough syrup 2) URO-5 An Ayurvedic formulation useful for Kidney Stone and other related disorders, phase -3 clinical trials are in final stage at KGMU, Lucknow. Indian patent applications for both Ayurvedic medicines have been filed but not yet granted. Application Numbers are: 1. 1591DEL2014 -NBRMAP 2. 201811044361 –URO-5
(b)	The total number of Ayurvedic medicines brands in our country	One Ayurvedic medicines with the trade name (BGR-34) developed by CSIR-NBRI.
(c)	Whether Government has ensured their perfection and authenticity, if so, the details thereof	No information

(d)	Whether Government is trying to find out traditional medicines and after re-examination getting their patents, and	No information
(e)	The number of Government owned Ayurveda labs in the country	No information

**Subject: Reply of Rajya Sabha Question Diary No U3914**

**Ref: Your E-mail dated March 11, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Goyal,

Kindly refer E-mail dated March 11, 2020, regarding **Rajya Sabha Question Diary No U3914,**

I am directed to submit the desired information as under:

<b>S. No.</b>	<b>Rajya Sabha Question Diary No U3914</b>	<b>Response/Reply from CSIR-NBRI</b>
(a)	whether it is a fact that Government has launched a programme to research on indigenous cows if so, the details thereof; and	No information
(b)	whether it is also a fact that a scientific research will be carried out on milk products derived from indigenous cows if so, the details thereof?	No information

**Subject: Reply of Lok Sabha Question Dairy No.-12491**

**Ref: Your E-mail dated 12 March 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Goyal,

Kindly refer E-mail dated 12/03/2020, regarding Lok Sabha Question Dairy No.- 12491, I am directed to submit the desired information as under:

<b>S. No.</b>	<b>Question Asked</b>	<b>Response/Reply from CSIR-NBRI</b>
a)	the number of research on medicinal values of plants carried out and also the ongoing research project in the country, and	Total 62 research projects were/ are carried out/ongoing in the institute on medicinal values of plants. Details attached as per annexure-1
b)	the details of the institutions involved in research work on this issue?	CSIR- NBRI, Lucknow and funding institutions details as per attached annexure-1.

Annexure-I
<b>Completed Projects</b>

S.N	Project	Code	Project title	Start Date	Comp Date	Funding Agency
1	GAP	2737	Short term validation of herbal traditional knowledge	01-Apr-06	30-Sep-06	CSIR
2	TLP	4003	Herbal based preparations for degenerative disorders: Diabetes mellitus type II (NIDDM) with emphasis on insulin sensitisation and Herboprint- A tool for standardisation of herbal medicines	01-Apr-02	31-Mar-07	CSIR Under NMITLI
3	TLP	4002	Herbal based preparations for degenerative disorders: Common hepatic disorders with emphasis on hepatocellular protection and Herboprint- A tool for standardisation of herbal medicines	01-Apr-02	31-Mar-07	CSIR Under NMITLI
4	COR	0002	Medicinal plant chemotypes for enhanced marker and value added compounds	01-Apr-02	31-Mar-07	CSIR
5	GAP	2739	Development of herbal formulation used in treatment of hepatic cellular carcinoma	01-May-06	30-Apr-07	DST, New Delhi
6	GAP	2732	Development of anti-ulcer herbal formulation	01-Jul-04	30-Jun-07	DST, New Delhi
7	TLP	4004	Ayurved based herbal preparations for degenerative disorders: Osteoarthritis (OA) and Rheumatoid Arthritis (RA) and Herboprint- A tool for standardisation of herbal medicines	01-Apr-02	30-Sep-07	CSIR Under NMITLI
8	GAP	2731	Development of quality standards of medicinal plants and preparation of monographs thereof	01-Apr-04	30-Sep-07	ICMR, New Delhi

9	COR	0023	Coordinated programme on discovery and commercialization of new bioactive and traditional preparations	01-Apr-04	31-Mar-08	CSIR
10	GAP	2736	Setting up of herbal garden viz. "Indian Garden" adjacent to India Room at WHO Building Complex, Geneva	01-Mar-06	31-Mar-08	MH&FW, New Delhi
11	GAP	2738	Isolation, characterization and biological screening of <i>Fumaria indica</i> on the cell cycle of hepato cellular carcinoma in experimental animals.	01-Apr-06	31-Mar-08	ICMR, New Delhi
12	GAP	2734	Identification of chemical markers for quality evaluation and standardization of an important ayurvedic drug - Dushmoola	01-May-05	15-May-08	DST, New Delhi
13	GAP	2145	Scientific validation of some Bryophytes used in different folklore as anti-microbial agents	01-May-05	29-May-08	DST, New Delhi
14	GAP	2735	Development and investigation into the molecular mechanism of action of herbal composition(s) used in treatment of gastrointestinal disorders	01-Jul-05	30-Jun-08	DST, New Delhi
15	GAP	2730	Development of SMPs and pharmaceutical standard including shelf-life studies of some important Vati/ Ghanvati and Avelaha (ASU drugs) - under APC Scheme	01-Jun-03	31-Mar-10	MH&FW, New Delhi
16	GAP	2741	Golden Triangle Partnership (GTP) scheme for validation of traditional Ayurvedic drugs and development of new drugs	01-Jul-06	31-Mar-10	Deptt. of AYUSH through CSIR

17	MLP	0005	Short term validation of traditional knowledge (particular emphasis on diarrhoea)	01-Jul-07	31-Mar-10	CSIR
18	GAP	2746	Screening of herbal drugs used in treatment of hepato cellular carcinoma	01-Jan-08	31-Dec-10	DST, New Delhi
19	GAP	2749	Role of selected flavonoids on gastroesophageal reflux disease (GERD) and gastric ulcer in rats	01-Jan-09	31-Dec-10	ICMR, New Delhi
20	GAP	2757	Medicinal plants to Officials/Doctors of Myanmar under WHO fellowship programme	25-Apr-11	24-Jul-11	WHO
21	GAP	2453	Identification and characterization of novel anti-viral compounds from medicinal plants: A step towards the development of microbicides and national facility of screening of promising microbicides	01-Nov-06	30-Sep-11	DBT, New Delhi
22	GAP	2751	Identification of substitutes for traded drug chirayata (Swertia species) using pharmacognostical parameters	01-Jan-09	31-Dec-11	NMPB, MH&FW, New Delhi
23	GAP	2750	Identification and biological studies of potential bioactive constituents from important medicinal plants (Aegle marmelos) used in gastrointestinal disorders and their geographical variations in chemical markers	01-Jan-09	31-Dec-11	NMPB, MH&FW, New Delhi
24	NWP	0037	Discovery and preclinical studies of new bioactive molecules (natural and semi-synthetic) & traditional preparations	01-Apr-08	31-Mar-12	CSIR

25	GAP	2754	Preparation and supply of Botanical Reference Substances (BRS) to Indian Pharmacopoeia Commission (IPC), New Delhi	01-Nov-09	31-Mar-12	IPC, MH&FW, New Delhi
26	GAP	2747	Studies on relationship between ecogeography of the chemotypic variation of nine important but highly threatened medicinal plant species and prospects of their cultivation	11-Jul-08	30-Jun-12	ICAR under NAIP, New Delhi
27	GAP	2755	Development of herbal Formulations and characterization of their active components for prevention of HIV infection	05-Oct-10	04-Feb-13	DBT, New Delhi
28	GAP	2561	Selecting elite chemotypes for gugulsterone production in guggul ( <i>Comiphora wightii</i> ): Metabolic profiling and identifying biomarkers	01-Sep-10	31-Dec-13	DBT, New Delhi
29	GAP	2748	Study of herbal acaricides as means to overcome the development of resistance in ticks to conventional acaricides	22-Jul-08	31-Mar-14	ICAR under NAIP, New Delhi
30	GAP	2753	Novel approaches for production of nutraceuticals from milk and Indian herbs for potential use in functional dairy foods	01-Sep-09	31-Mar-14	ICAR under NAIP, New Delhi
31	GAP	2756	Reviving traditional remedies for age dementia disorders in elderly: Documentation and dissemination of ancient Indian wisdom as mentioned in Ayurveda	01-Apr-11	31-Mar-14	DST, New Delhi
32	GAP	3320	Chemo-profiling of potential phyto-acaricides and their functional characterization for controlling resistant cattle ticks.	01-Apr-13	31-Mar-16	ICAR, New Delhi

33	GAP	3322	Identification & Evaluation of some lesser known plants for malnutrition and development of a low cost herbal combination thereof	01-Jul-13	30-Jun-16	UPCST, Lucknow
34	GAP	3325	Nutritional profiling and antioxidant activity of selected small milletes	08-Aug-13	07-Aug-16	SERB, New Delhi
35	OLP	0089	Quality evaluation and scientific validation of indigenous Indian medicinal plants having industrial application (pharmaceutical, nutraceutical, cosmaceutical) and development of herbal product(s) based on traditional knowledge	01-Apr-12	31-Mar-17	CSIR-NBRI
36	GAP	3339	Promoting guggulsterone production in <i>Commiphora wightii</i> : Metabolite profiling of contrasting chemotypes and identifying precursors of guggulsterones	05-Aug-14	04-Aug-17	DBT, New Delhi
37	GAP	3345	Standardization and validation of Lichen species: <i>Usnea longissima</i> and <i>Cladonia furcata</i> used in peptic ulcer	10-Nov-14	31-Mar-18	SERB, New Delhi
38	GAP	3375	Identification of elite chemotype(s) and evaluation of biological properties of essential oils from <i>Cyperus rotundus</i> Linn. from different phytogeographical zones of India	01-Jun-16	31-May-18	SERB, New Delhi
39	GAP	3358	Phytochemical and pharmacological studies of the isolated polyphenols from the resurrection plant <i>Selaginella bryopteris</i> (Sanjeevani)	23-Jun-15	22-Jun-18	ICMR, New Delhi



40	GAP	3357	Metabolite profiling of Amaranth for high squalene yielding chemotypes in control of hypertension	23-Jun-15	22-Jun-18	ICMR, New Delhi
41	GAP	3450	Effect of co-administration of green tea polyphenols with <i>Asparagus racemosus</i> - <i>Withania somnifera</i> phytosomes: Neuro-protective outcomes and modalities in the therapy of ischemia induced neuro-degeneration	02-Apr-18	29-Apr-19	SERB, New Delhi
42	GAP	3374	Identification of Potential Bioactive Chemical Marker Compounds and Biological Studies of <i>Gloriosa superba</i> and their Geographical Variations	17-May-16	16-May-19	NMPB, Ministry of AYUSH, New Delhi
43	GAP	3384	Microbial roles in yield management of scented rice of North-East, India	27-Oct-16	26-Oct-19	DBT, New Delhi
<b>Ongoing Projects</b>						
1	GAP	3402	Development Of Plant Based Synergistic Natural Supplement and its Pharmacological Validation to Alleviate Gouty Arthritic Conditions	22-Mar-17	21-Mar-20	DST, New Delhi
2	OLP	0106	Herbal product development for industrial application	01-Apr-17	31-Mar-20	CSIR-NBRI
3	MLP	0029	Pahtway elucidation and identification of genes involved in guggulsterones biosynthesis in <i>commiphora</i> sps	16-Nov-18	31-Mar-20	CSIR
4	GAP	3424	Identification of elite chemoytpe of <i>Plumbago zeylanica</i> Linn. Collected from different phyto-geographical zones of India and evaluation of biological potential of elite germplasm	05-Dec-17	04-Dec-20	DST, New Delhi

5	GAP	3460	Capacity development of tribal populations in Chitrakoot region for utilization of local bioresources for improved livelihood	05-Mar-19	04-Mar-21	NASI, Prayagraj
6	GAP	3432	Evaluation of seasonal effect on anti-hypertensive in dole alkaloid of Rauvolfia sp. From Northern India and development & validation of physicochemical and molecular markers	13-Mar-18	12-Mar-21	UPCST, Lucknow
7	GAP	3439	Bioresource and sustainable livelihoods in North East India: Component 4 & Sub-project 1 "Product development and partner support for demonstration farming and value addition "	29-Mar-18	28-Mar-21	DBT, New Delhi
8	GAP	3453	Understanding the molecular mechanism of defense in pigeon pea (Cajanus cajan) due to infestation by Helicoverpa armigera	12-Sep-18	11-Sep-21	DBT, New Delhi
9	GAP	3454	Poverty alleviation through popularization of locally available medicinal-dietary plants for the prevention of malnutrition among the SC/ST children and women	27-Sep-18	26-Sep-21	DBT, New Delhi
10	GAP	3462	Comprehensive Metabolic profiling and pharmacological studies of piper species: a natural bio-enhancer in pharmaceuticals	05-Feb-19	04-Feb-22	DBT, New Delhi

11	HCP	0010	CSIR Phytopharmaceutical Mission: Catalyzing Phytomaceutical drug discovery as per global standards for unmet medicinal needs from indigenous medicinal plants under captive cultivation	08-Dec-17	31-Mar-20	CSIR
12	SSP	2904	Breeding and genetic improvement of Hemp ( <i>Cannabis sativa</i> L.) for industrial and medicinal purposes	07-Sep-18	06-Sep-23	Sir Dorabji Tata Trust & Atulya Krishi Foundation (AKF) on behalf of BOHECO, Mumbai
13	GAP	3373	Search for elite chemotype(s) of <i>Centella asiatica</i> and their relationship with Ecogeography	17-May-16	16-May-20	NMPB, Ministry of AYUSH, New Delhi
14	GAP	3386	Chemotyping and molecular profiling of bioactive metabolites in <i>Hemidesmus indicus</i> and <i>Costus speciosus</i> , adapted to different phytogeographical zones and identification of candidate genes related to metabolic pathways	01-Jan-17	31-Dec-20	NASF, ICAR, New Delhi
15	GAP	3393	Metabolomic analysis for isoquinoline alkaloids from therapeutically important genus <i>Berberis</i> L.	06-Feb-17	05-May-20	SERB, New Delhi
16	GAP	3400	Secondary plant product pathway engineering for enhanced nutritional quality and yield	24-Mar-17	23-Mar-22	DBT, New Delhi
17	GAP	3403	Molecular Systematics of the Genus <i>Betula</i> L. (Betulaceae) in India	17-Mar-17	16-Mar-21	SERB, New Delhi

18	GAP	3438	Bioresource and sustainable livelihoods in North East India: Component 3 & Sub-project 2 "Assess the economic value of bio-resources and their role in meeting the societal needs and sustainable development goals "	29-Mar-18	28-Mar-21	DBT, New Delhi
19	GAP	3474	Understanding transcriptional regulation of withanolide biosynthesis in <i>Withania somnifera</i>	08-Jan-20	07-Jan-22	SERB, New Delhi

**Subject: Reply of Lok Sabha Question No.-4437**

**Ref: Your E-mail dated 17 March 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Singh,

Kindly refer E-mail dated 17/03/2020, regarding Lok Sabha Question No.- 4437, I am directed to submit the desired information as under:

S. No.	Question Asked	Response/Reply from CSIR-NBRI
a)	Whether the government has taken any initiative to document and classify the rare and medicinal plants of Himalayan region and other traditional medical system for medicinal use:	CSIR-NBRI undertakes survey and studies in the Himalayan region under different projects/programs. During the course of such field studies, we document rare and medicinal plants and their traditional uses
b)	If so, the details thereof	CSIR-NBRI has contributed significantly towards the development of Comprehensive Traditional Knowledge Digital Library (CTKDL), a CSIR initiative to document the traditional knowledge from country including the medicinal plants from Himalayan region. About 2800 medicinal plant species were documented digitally with detailed information on habit, habitats, description, conservation status, distribution etc.
c)	Whether the government proposes to set up any specialized central agency to further encourage research and classification of the traditional medicine systems, based on rare plants and herbs of the Eastern Himalayan region; and	No Information

d)	If so, the details thereof and if not, reasons therefor?	Not applicable
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**Subject: Reply of Lok Sabha Question No 4597**

**Ref: Your E-mail dated March 17, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Goyal,

Kindly refer E-mail dated March 17, 2020, regarding **Lok Sabha Question No. 4597**, I am directed to submit the desired information as under:

S. No.	Lok Sabha Question No. 4597	Response/Reply from CSIR-NBRI
(a)	Whether the Government has any proposals to set up a herbal medicine research centre in the country, if so, the details thereof:	No information
(b)	The number of herbal medicine centers set up and operational in the country, state/UT-wise:	No information
(c)	Whether the Government provides training for production, extraction, storage and marketing of herbs, if so, the details thereof; and	CSIR-NBRI has started a novel skill development programme since 2017 for creating a cadre of "Quality analysts for AYUSH based formulation industries". Since quality control is an essential requirement in herbal industry, the Ministry of AYUSH has approved this skill development programme for 240hrs duration and has notified to AYUSH industries to employ such skilled manpower trained from CSIR-NBRI. The syllabus includes assessment of various quality parameters for raw drugs as per AYUSH norms.
(d)	Whether any special scheme has been formulated to promote research in the AYUSH sector, if so, the details thereof and the funds allocated for the aforesaid purpose?	No information

**Subject: Reply of Rajya Sabha Question No U4339**

**Ref: Your E-mail dated March 18, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Goyal,

Kindly refer E-mail dated March 18, 2020, regarding **Rajya Sabha Question No. U4339**, I am directed to submit the desired information as under:

S. No.	Rajya Sabha Question No. U4339	Response/Reply from CSIR-NBRI
(B)	Whether there is any complaint or case against any scientist or scientists on the unauthorized transfer of technology without proper sanction from the Ministry or Departments, if so, details of such cases and the actions taken by Government on this regard;	Nil
(C)	The details of actions taken by Government on such complaints or cases; and	NA

**Subject: Reply of Rajya Sabha Question No U2438**

**Ref: Your E-mail dated March 18, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Goyal,

Kindly refer E-mail dated March 18, 2020, regarding **Rajya Sabha Question No. U2438**, I am directed to submit the desired information as under:

S. No.	Rajya Sabha Question No. U2438	Response/Reply from CSIR-NBRI
a)	Whether Government has unveiled a programme to research on indigenous cows with the initiative-SUTRA PIC:	No Information
b)	If so, the details thereof and progress made;	NA
c)	The role of researchers/NOGs/academicians in this regard; and	No Information
d)	The objectives set/achieved of the said programme including on milk derivatives along with funds sanctioned/spent for this purpose?	No Information

**Subject: Expenditure on Annual Report and Periodicals for the year 2019**

**Ref: Your E-mail dated 18 March 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. K. Venkatasubramanian,

Kindly refer E-mail dated 18/03/2020, regarding Information related to Expenditure on Annual Report and Periodicals for the year 2019, I am directed to submit the desired information in given format as under:

Annual Report 208-19		Periodical (Vigyan Vani 2019)	
Nos.	Expenditure (In Rs.)	Nos.	Expenditure (In Rs.)
500	2,34,279 (Payment yet to be made)	500	102000

**Subject: Reply of Lok Sabha Question No. 12818**

**Ref: Your E-mail dated March 20, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Singh,

Kindly refer E-mail dated March 20, 2020, regarding **Lok Sabha Question No. 12818**, I am directed to submit the desired information as under:

S. No.	Lok Sabha Question No. 12818	Response/Reply from CSIR-NBRI
e)	Whether the genetic engineering is constantly attracting the attention of scientist community of entire world including India;	Yes
f)	If so, the details thereof and the reasons therefore;	Genetic engineering is a potential tool of introducing important traits in plants. These traits can be agriculturally very important like improving yield, nutritionally enriched food, making plants resistance to infections and pests and also making plants resilient to adverse atmospheric conditions like drought, salinity, flooding etc. Globally, including in India we has already witness the beneficial impact of BT-Cotton for last almost two decades. The genetically engineered BT-cotton varieties and hybrids are resistant to insects in improving yield by preventing damages caused by bollworm, a major pest in cotton.
g)	The steps taken by the government for promoting the research in genetics engineering, keeping in view the development especially in the field of	This answer can be best provided by funding agencies like DBT, DST, CSIR and ICAR.

	Agriculture, Floriculture, Fisheries and Animal husbandry; and	
h)	The details projects under implementation at present along with the genetic engineering research facilities available in the country especially in Jammu and Kashmir and Madhya Pradesh?	CSIR-NBRI, Lucknow has a state of the art genetic engineering facility. In CSIR-NBRI, we are trying to improve following crops using genetic engineering: <ul style="list-style-type: none"> <li>• Cotton: Insect resistance, drought tolerance, early maturity and high yielding varieties.</li> <li>• Tomato: Drought tolerance, high yielding and early maturing, delayed ripening, nutritional enhancement.</li> <li>• Rice: Low grain arsenic, abiotic stress tolerance.</li> <li>• Chickpea: Drought tolerance and insect resistance.</li> </ul>

**Ref: Your E-mail dated September 11, 2020 to Director CSIR-NBRI, Lucknow**

Dear Dr. Singh,

Kindly refer E-mail dated **September 11, 2020** regarding **Rajya Sabha Question No. U698,**

I am directed to submit the desired information as under:

- a) Whether the National Medicinal Plants Board (NMPB) which was set to promote medicinal plants sector in the country has achieved the objective for which it was set up and if so, the details thereof and if not, the steps taken by the Government in this regards

**Ans. NA**

- b) Whether NMPB is planning to develop a corridor of medicinal plants along the banks of River Ganga, if so, the details thereof and;

**Ans. NA**

- c) The steps taken by the government for conservation, cultivation and commercial exploitation of indigenous medicinal/aromatic plants along with the funds earmarked allocated and utilised for the purpose during each of the last three years, state wise

**Ans.**

- CSIR-NBRI was supported under CSIR-Phytopharmaceutical Mission and by other funding agencies for cultivation, identification, documentation and conservation of medicinal and aromatic plants.
- Mass multiplication of quality planting material for captive cultivation, post-harvest management and random quality check of selected medicinal plants namely, namely, *Tinospora cordifolia* and *Gymnema sylvestre* was done for developing region specific agrotechnologies



Under phytopharmaceutical mission, CSIR-NBRI has collected a total of 156 samples of *Tinospora cordifolia* and 202 samples of *Gymnema sylvestre* from different geographical locations in India. The collected plant materials are maintained at Botanic Garden and Banthra Research Station of the Institute. The chemical profiling of *Tinospora cordifolia* (79) and *Gymnema sylvestre* (53) accessions were carried out to quantify bioactive metabolites using HPLTC. The accessions with maximum amount of bioactive metabolites have been identified, and these accessions are being multiplied at Banthra Research Station (BRS) of the Institute and Captive cultivation of *T. cordifolia* and *G. sylvestre*, respectively is being carried in 0.6 hectare for each species at BRS.

- The genetic diversity and population structure among 96 indigenous accessions of *T. cordifolia* was estimated.
- A total of 147 samples of *Commiphora wightii*, 115 samples of *Dioscorea deltoidea* were collected along with the geocoordinate data for each sample from different locations of Gujarat, Madhya Pradesh, Rajasthan, Uttarakhand, Jammu & Kashmir, Darjeeling and Sikkim. These accessions are being maintained at Botanic Garden and Banthra Research Station of the Institute. Captive cultivation of *C. wightii* and *D. deltoidea* is being carried in one acre of area for each species at Banthra Research Station (BRS). Chemical profiling of 116 samples (latex) of *C. wightii* were carried out for Guggulesterone Z, Guggulesterone E and Progesterone and ninety two (92) *D. deltoidea* samples for Diosgenin, Dioscin,  $\beta$ -Sitosterol and Stigmasterol using HPLC and GC-MS.
- A reproducible and rapidly multiplied tissue culture protocols for propagation was established for *C. wightii* and *D. deltoidea*. Macro as well as micro-propagation protocols, protocols for chemotyping and genotyping of accessions were standardized for identification of quality plant material of *C. wightii* and *D. deltoidea*.
- Gene bank (1acre/species) for both the RET species *C. wightii* and *D. deltoidea* have been established at Banthra Research Station. Elite/potential bio bioactive metabolites contents containing accessions were identified based on phytochemical evaluation of *C. wightii* and *D. deltoidea*. These accessions are being multiplied using well developed protocols of macro as well as micro-propagations.
- The funds allocated under phytopharmaceutical mission to CSIR-NBRI is 280.45 lakhs and a total of Rs. 169.998 was utilized for the purpose.

**Subject: Reply of Lok Sabha Q. No. 7537**

**Ref: E-mail dated 17 September, 2020 to Director, CSIR-NBRI, Lucknow**

Dear Dr. Mayank Mathur,

With reference to your E-mail dated 08/02/2019, regarding Lok Sabha Question. No. 7537, I am directed to submit the desired information is as under:

Questions	Reply from CSIR-NBRI
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a)	Whether the government has planned to develop herbal gardens with prominent medicinal plants in the country including Maharashtra in collaboration with Multi-National Companies (MNCs);	CSIR- NBRI has no proposal to develop Herbal Garden in collaboration with any MNC.
b)	If so, the details thereof and If not the reasons thereof;	Not applicable
c)	The details about the current herbal gardens in the country;	No information
d)	Whether the Government is providing any incentives to the farmers to promote herbal farming	CSIR-NBRI, is supporting farmers for herbal farming under CSIR AROMA Mission
e)	If so the type of assistance being provided by the Government for the same and the details thereof, state-wise?	Not applicable
f)	The other new initiatives taken by Government during the last three years	No information

**Subject: Reply of Lok Sabha Q. No. U2995, U3049**

**Ref: E-mail dated 17 September, 2020 to Director, CSIR-NBRI, Lucknow**

Dear Dr. Mayank Mathur,

With reference to your E-mail dated 17/09/2019, regarding Rajya Sabha Question. No. U2995, U3049, I am directed to submit the desired information is as under:

<b>Questions</b>		<b>Reply from CSIR-NBRI</b>
g)	The details of the research undertaken by the accredited institutions and universities on various aspects of medicinal plants so far in the country, research wise, institute wise;	Yes. CSIR-NBRI working on medicinal plants. Details of the research projects on Medicinal Plants undertaken by CSIR-NBRI is attached as per annexure I.
h)	Whether these researchers have achieved in developing new medicines in Ayurveda;	Yes.

i)	If so, the details thereof and	<ul style="list-style-type: none"> <li>• One of the Ayurvedic products viz.BGR-34 (NBRMAP-DB) has been developed taking leads from the Ayurveda for the management of Type-2 diabetes mellitus (T2DM)</li> <li>• <b>A potential herbal combination for alleviating urolithiasis, nephrolithiasis and post lithotripsy conditions (ESWL):</b> CSIR-NBRI has recently developed an herbal formulation to alleviate urolithic, an Indian patent has been filed and technology has been transferred to industry for its commercialization. This product is efficacious and cost effective than existing herbal brands against Urolithiasis &amp; nephrolithiasis.</li> </ul>
j)	The steps taken by the Government to promote Ayurvedic Medicine globally	No Information

Project	Code	Project title	Funding Agency	Start Date	Comp Date
GAP	3204	Development of agro-techniques and cultivation of medicinal plants Used in Ayurveda, Siddha, Unani and Homoeopathy	MH&FW, New Delhi	01-Apr-97	31-Mar-01
GAP	2710	Organic cultivation and semi-processing of high value medicinal plants involving rural women	DST, New Delhi	01-Jan-00	30-Jun-03
GAP	2713	Bio-prospecting of bio-diversity, conservation of medicinal plants and development of plant based health care system in A&N Islands.	DST, New Delhi	01-Jul-00	31-Jul-03
GAP	2715	Development of standards of therapeutically important medicinal	ICMR, New Delhi	01-Nov-00	30-Nov-03

		plants and preparation of monograph.			
GAP	2720	Inventorising medicinal plant resources of India	DBT, New Delhi	01-Aug-01	30-Nov-03
GAP	2719	Traditional medicinal plants: Chemistry, nutraceuticals and agro-techniques for cultivation on sodic/alkaline soil	UPCST, Lucknow	01-Oct-01	30-Sep-04
GAP	3209	To screen suitable medicinal crop plants for sodic soil	UPCAR, Lucknow	01-Jun-02	30-Jun-04
GAP	2728	Survey of Medicinal and Aromatic plants in Jharkhand	KVIC, Mumbai	01-Mar-03	31-Jan-05
GAP	2528	Establishment of herbal medicinal garden at Rastrapati Bhawan	MH&FW, New Delhi	01-May-03	30-Apr-06
GAP	2730	Development of SMPs and pharmaceutical standard including shelf-life studies of some important Vati/ Ghanvati and Avehela (ASU drugs) - under APC Scheme	MH&FW, New Delhi	01-Jun-03	31-Mar-10
GAP	2731	Development of quality standards of medicinal plants and preparation of monographs thereof	ICMR, New Delhi	01-Apr-04	30-Sep-07
GAP	2732	Development of anti-ulcer herbal formulation	DST, New Delhi	01-Jul-04	30-Jun-07
GAP	2145	Scientific validation of some Bryophytes used in different folklore as anti-microbial agents	DST, New Delhi	01-May-05	29-May-08
GAP	2734	Identification of chemical markers for quality evaluation and standardization of an important ayurvedic drug - Dushmoola	DST, New Delhi	01-May-05	15-May-08
GAP	2735	Development and investigation into the molecular mechanism of action of herbal composition(s) used in treatment of gastrointestinal disorders	DST, New Delhi	01-Jul-05	30-Jun-08
GAP	3211	Popularization of medicinal plants and revitalization of indigenous systems of medicine and household remedies among villages of Lucknow district through pamphlets, posters, charts and small booklets	DST, New Delhi	01-Feb-06	31-Mar-09

GAP	2736	Setting up of herbal garden viz. "Indian Garden" adjacent to India Room at WHO Building Complex, Geneva	MH&FW, New Delhi	01-Mar-06	31-Mar-08
GAP	2739	Development of herbal formulation used in treatment of hepatic cellular carcinoma	DST, New Delhi	01-May-06	30-Apr-07
GAP	3212	Cultivation, post harvesting and value addition of medicinal plants for income generation and health protection by rural women of weaker sections	DST, New Delhi	01-May-06	30-Apr-09
GAP	2741	Golden Triangle Partnership (GTP) scheme for validation of traditional Ayurvedic drugs and development of new drugs	Deptt. of AYUSH through CSIR	01-Jul-06	31-Mar-10
GAP	2453	Identification and characterization of novel anti-viral compounds from medicinal plants: A step towards the development of microbicides and national facility of screening of promising microbicides	DBT, New Delhi	01-Nov-06	30-Sep-11
GAP	2458	Identification and development of a web-enabled database on medicinal plants used in ISM (Ayurveda, Siddha & Unani)	MH&FW through Dept. of AYUSH	01-Sep-07	30-Oct-08
GAP	2746	Screening of herbal drugs used in treatment of hepato cellular carcinoma	DST, New Delhi	01-Jan-08	31-Dec-10
NWP	37	Discovery and preclinical studies of new bioactive molecules (natural and semi-synthetic) & traditional preparations	CSIR	01-Apr-08	31-Mar-12
GAP	2747	Studies on relationship between ecogeography of the chemotypic variation of nine important but highly threatened medicinal plant species and prospects of their cultivation	ICAR under NAIP, New Delhi	11-Jul-08	30-Jun-12
GAP	2748	Study of herbal acaricides as means to overcome the development of resistance in ticks to conventional acaricides	ICAR under NAIP, New Delhi	22-Jul-08	31-Mar-14

GAP	2750	Identification and biological studies of potential bioactive constituents from important medicinal plants ( <i>Aegle marmelos</i> ) used in gastrointestinal disorders and their geographical variations in chemical markers	NMPB, MH&FW, New Delhi	01-Jan-09	31-Dec-11
GAP	2751	Identification of substitutes for traded drug chirayata ( <i>Swerita</i> species) using pharmacognostical parameters	NMPB, MH&FW, New Delhi	01-Jan-09	31-Dec-11
GAP	2753	Novel approaches for production of nutraceuticals from milk and Indian herbs for potential use in functional dairy foods	ICAR under NAIP, New Delhi	01-Sep-09	31-Mar-14
GAP	2754	Preparation and supply of Botanical Reference Substances (BRS) to Indian Pharmacopoeia Commission (IPC), New Delhi	IPC, MH&FW, New Delhi	01-Nov-09	31-Mar-12
GAP	3216	Establishment of small nursery for fast multiplication of elite clones and new varieties of medicinal and aromatic, gum and dye yielding plants	UPCAR, Lucknow	01-Apr-10	31-Mar-11
GAP	2561	Selecting elite chemotypes for guggulsterone production in guggul ( <i>Comiphora wightii</i> ) : Metabolic profiling and identifying biomarkers	DBT, New Delhi	01-Sep-10	31-Dec-13
GAP	2755	Development of herbal Formulations and characterization of their active components for prevention of HIV infection	DBT, New Delhi	05-Oct-10	04-Feb-13
GAP	2159	Propagation and reproductive biology for conservation of some critically endangered highly potential medicinal plants" (Women Scientist Scheme A)	DST, New Delhi	23-Nov-10	22-Nov-13
GAP	2756	Reviving traditional remedies for age dementia disorders in elderly: Documentation and dissemination of ancient Indian wisdom as mentioned in Ayurveda	DST, New Delhi	01-Apr-11	31-Mar-14

OLP	89	Quality evaluation and scientific validation of indigenous Indian medicinal plants having industrial application (pharmaceutical, nutraceutical, cosmaceutical) and development of herbal product(s) based on traditional knowledge	CSIR-NBRI	01-Apr-12	31-Mar-17
BSC	106	Bioprospecaion of plant resources and other natural products (BioprosPR)	CSIR	01-Apr-12	31-Mar-17
GAP	3313	Evaluation of medicinal plants for cultivation in sodic wastelands of Uttar Pradesh	UPCST, Lucknow	01-Nov-12	31-Oct-15
GAP	3319	Production of phytochemcials from best chemotypes of some threatened medicinal plants through modified cultivation and in-vitro production technologies	ICAR, New Delhi	01-Apr-13	30-Sep-17
GAP	3320	Chemo-profiling of potential phyto-acaricides and their functional characterization for controlling resistant cattle ticks.	ICAR, New Delhi	01-Apr-13	31-Mar-16
GAP	3318	Utilization of industrial wastes for cultivation of medicinal and aromatic plants in sodic soils	SERB, New Delhi	03-Apr-13	02-Apr-16
GAP	3322	Identification & Evaluation of some lesser known plants for malnutrition and development of a low cost herbal combination thereof	UPCST, Lucknow	01-Jul-13	30-Jun-16
GAP	3339	Promoting guggulsterone production in <i>Commiphora wightii</i> : Metabolite profiling of contrasting chemotypes and identifying precursors of guggulsterones	DBT, New Delhi	05-Aug-14	04-Aug-17
GAP	3345	Standardization and validation of Lichen species: <i>Usnea longissima</i> and <i>Cladonia furcata</i> used in peptic ulcer	SERB, New Delhi	10-Nov-14	31-Mar-18
GAP	3355	Establishment of small nursery for fast multiplication of elite clones and new varieties of medicinal and aromatic plants	Directorate of Horticulture and Food	27-Apr-15	26-Apr-16

			Processing UP		
GAP	3357	Metabolite profiling of Amaranth for high squalene yielding chemotypes in control of hypertension	ICMR, New Delhi	23-Jun-15	22-Jun-18
GAP	3358	Phytochemical and pharmacological studies of the isolated polyphenols from the resurrection plant selaginella bryopteris (Sanjeevani)	ICMR, New Delhi	23-Jun-15	22-Jun-18
GAP	3371	Assessment of population dynamics and carbon sequestration potential in conjunction with sustainable utilization of some medicinally important plant species to expedite conservation goals	SERB, New Delhi	08-Apr-16	07-Apr-18
GAP	3373	Search for elite chemotype(s) of Centella asiatica and their relationship with Ecogeography	NMPB, Ministry of AYUSH, New Delhi	17-May-16	16-May-20
GAP	3374	Identification of Potential Bioactive Chemical Marker Compounds and Biological Studies of Gloriosa superba and their Geographical Variations	NMPB, Ministry of AYUSH, New Delhi	17-May-16	16-May-19
GAP	3386	Chemotyping and molecular profiling of bioactive metabolites in Hemidesmus indicus and Costus speciosus, adapted to different phytogeographical zones and identification of candidate genes related to metabolic pathways	NASF, ICAR, New Delhi	01-Jan-17	31-Dec-20
GAP	3393	Metabolomic analysis for isoquinoline alkaloids from therapeutically important genus Berberis L.	SERB, New Delhi	06-Feb-17	05-May-20
GAP	3403	Molecular Systematics of the Genus Betula L. (Betulaceae) in India	SERB, New Delhi	17-Mar-17	16-Mar-21
GAP	3402	Development Of Plant Based Synergistic Natural Supplement and its Pharmacological Validation to Alleviate Gouty Arthritic Conditions	DST, New Delhi	22-Mar-17	21-Sep-20



GAP	3400	Secondary plant product pathway engineering for enhanced nutritional quality and yield	DBT, New Delhi	24-Mar-17	23-Mar-22
OLP	106	Herbal product development for industrial application	CSIR-NBRI	01-Apr-17	31-Mar-20
GAP	3404	Revalidation of Good Agricultural Practices (GAPs) to develop agro-technology for the cultivation of medicinal plants	NMPB, Ministry of AYUSH, New Delhi	11-May-17	20-Nov-19
GAP	3424	Identification of elite chemotype of <i>Plumbago zeylanica</i> Linn. Collected from different phyto-geographical zones of India and evaluation of biological potential of elite germplasm	DST, New Delhi	05-Dec-17	04-Dec-20
HCP	10	CSIR Phytopharmaceutical Mission: Catalyzing Phytomaceutical drug discovery as per global standards for unmet medicinal needs from indigenous medicinal plants under captive cultivation	CSIR	08-Dec-17	31-Mar-20
GAP	3432	Evaluation of seasonal effect on anti-hypertensive in dole alkaloid of <i>Rauvolfia</i> sp. From Northern India and development & validation of physicochemical and molecular markers	UPCST, Lucknow	13-Mar-18	12-Mar-21
GAP	3438	Bioresource and sustainable livelihoods in North East India: Component 3 & Sub-project 2 "Assess the economic value of bio-resources and their role in meeting the societal needs and sustainable development goals "	DBT, New Delhi	29-Mar-18	28-Mar-21
GAP	3439	Bioresource and sustainable livelihoods in North East India: Component 4 & Sub-project 1 "Product development and partner support for demonstration farming and value addition "	DBT, New Delhi	29-Mar-18	28-Mar-21
GAP	3450	Effect of co-administration of green tea polyphenols with <i>Asparagus racemosus</i> - <i>Withania somnifera</i>	SERB, New Delhi	02-Apr-18	29-Apr-19

		phytosomes: Neuro-protective outcomes and modalities in the therapy of ischemia induced neuro-degeneration			
SSP	2904	Breeding and genetic improvement of Hemp ( <i>Cannabis sativa</i> L.) for industrial and medicinal purposes	BOHECO, Mumbai	07-Sep-18	06-Sep-23
GAP	3453	Understanding the molecular mechanism of defense in pigeon pea ( <i>Cajanus cajan</i> ) due to infestation by <i>Helicoverpa armigera</i>	DBT, New Delhi	12-Sep-18	11-Sep-21
GAP	3454	Poverty alleviation through popularization of locally available medicinal-dietary plants for the prevention of malnutrition among the SC/ST children and women	DBT, New Delhi	27-Sep-18	26-Sep-21
MLP	29	Pahtway elucidation and identification of genes involved in guggulsterones biosynthesis in <i>commiphora</i> sps	CSIR	16-Nov-18	31-Mar-23
GAP	3462	Comprehensive Metabolic profiling and pharmacological studies of piper species: a natural bio-enhancer in pharmaceuticals	DBT, New Delhi	05-Feb-19	04-Feb-22
GAP	3460	Capacity development of tribal populations in Chitrakoot region for utilization of local bioresources for improved livelihood	NASI, Prayagraj	05-Mar-19	04-Mar-21
GAP	3474	Understanding transcriptional regulation of withanolide biosynthesis in <i>Withania somnifera</i>	SERB, New Delhi	08-Jan-20	07-Jan-22
SSP	2906	Development of Shodhan protocol and preparation of standardised cannabis extracts based AYUSH formulation	HempStreet Medicare Pvt. Ltd., Gurgaon	01-Feb-20	31-Jan-21

**Subject: Reply of Lok Sabha Q. No. 1102**

**Ref: E-mail dated 18 September, 2020 to Director, CSIR-NBRI, Lucknow**

Dear Dr. Mayank Mathur,

With reference to your E-mail dated 18/09/2019, regarding Lok Sabha Question. No. 1102 I am directed to submit the desired information is as under:

- a) whether the National Medicinal Plants Board (NMPB) has achieved the objective for which it was setup and, if so, the details thereof and if not, the corrective steps taken by the Government in this regard;

**Ans. NA**

- b) Whether a significant requirement of medicinal plants are met from wild sources even as cultivation of medicinal plants has started gaining momentum across the country, if so, the details thereof and the reasons therefor;

**Ans.** To meet the industrial demand on medicinal plants cultivation is to be must and it depends on the type of raw material (medicinal plant) used in product of industrial demand. No information on data across the country with CSIR-NBRI

- c) whether the Government is aware of the proposal to develop a corridor of medicinal plants along the banks of Ganga by the NMPB and if so, the details thereof; and

**Ans. NA**

- d) the steps taken/ proposed to be taken by the Government for the conservation, cultivation and commercial exploitation of indigenous medicinal/ aromatic plants along with the funds earmarked, allocated and utilized for the said purpose during each of the last three years, State/UT-wise

**Ans.**

- CSIR-NBRI was supported under CSIR-Phytopharmaceutical Mission and by other funding agencies for cultivation, identification, documentation and conservation of medicinal and aromatic plants.
- Mass multiplication of quality planting material for captive cultivation, post-harvest management and random quality check of selected medicinal plants namely, namely, *Tinospora cordifolia* and *Gymnema sylvestre* was done for developing region specific agrotechnologies  
Under phytopharmaceutical mission, CSIR-NBRI has collected a total of 156 samples of *Tinospora cordifolia* and 202 samples of *Gymnema sylvestre* from different geographical locations in India. The collected plant materials are maintained at Botanic Garden and Banthra Research Station of the Institute. The chemical profiling of *Tinospora cordifolia* (79) and *Gymnema sylvestre* (53) accessions were carried out to quantify bioactive metabolites using HPLTC. The accessions with maximum amount of bioactive metabolites have been identified, and these accessions are being multiplied at Banthra Research Station (BRS) of the Institute and Captive cultivation of *T. cordifolia* and *G. sylvestre*, respectively is being carried in 0.6 hectare for each species at BRS.
- The genetic diversity and population structure among 96 indigenous accessions of *T. cordifolia* was estimated.
- A total of 147 samples of *Commiphora wightii*, 115 samples of *Dioscorea deltoidea* were collected along with the geocoordinate data for each sample from different locations of Gujarat, Madhya Pradesh, Rajasthan, Uttarakhand, Jammu & Kashmir, Darjeeling and Sikkim. These accessions are being maintained at Botanic Garden and Banthra

Research Station of the Institute. Captive cultivation of *C. wightii* and *D. deltoidea* is being carried in one acre of area for each species at Banthra Research Station (BRS). Chemical profiling of 116 samples (latex) of *C. wightii* were carried out for Gugglesterone Z, Gugglesterone E and Progesterone and ninety-two (92) *D. deltoidea* samples for Diosgenin, Dioscin,  $\beta$ -Sitosterol and Stigmasterol using HPLC and GC-MS.

- A reproducible and rapidly multiplied tissue culture protocols for propagation was established for *C. wightii* and *D. deltoidea*. Macro as well as micro-propagation protocols, protocols for chemotyping and genotyping of accessions were standardized for identification of quality plant material of *C. wightii* and *D. deltoidea*.
- Gene bank (1acre/species) for both the RET species *C. wightii* and *D. deltoidea* have been established at Banthra Research Station. Elite/potential bio bioactive metabolites contents containing accessions were identified based on phytochemical evaluation of *C. wightii* and *D. deltoidea*. These accessions are being multiplied using well developed protocols of macro as well as micro-propagations.
- The funds allocated under phytopharmaceutical mission to CSIR-NBRI is 280.45 lakhs and a total of Rs. 169.998 was utilized for the purpose.

**Subject: Reply of Lok Sabha Q. No. 8486**

**Ref: E-mail dated 18 September, 2020 to Director, CSIR-NBRI, Lucknow**

Dear Mr. BK Singh,

With reference to your E-mail dated 18/09/2019, regarding Lok Sabha Question. No. 8486, I am directed to submit the desired information is as under:

<b>Questions</b>		<b>Reply from CSIR-NBRI</b>
a)	The details of the rules and guidelines at the work places for the health and safety of the labourers; and	CSIR-NBRI outsourced the labour services required for different purposes through a registered firm/agency. The contribution to the Employee State Insurance (ESI) fund for health services of the labours has been given as per government rules. Further, Institute has also constituted a Safety Committee which monitors the safety guidelines during the work/operations.
b)	The ministry wise details of the amount spent by the Government to ensure the health care of the labourers	No Information