

RFP for GUAR-GUM: TAPPING THE POTENTIAL OF NATURAL GEM

I. INTRODUCTION

A. Background:

Guar Gum is one of the most cost effective and functional ingredients available for formulating food products. Guar imparts a high viscosity and exhibits superior water-binding capacity at low usage levels as it is soluble in cold water. These characteristics make it suitable for use in diverse industries such as cottage cheese, sauces, soups, and frozen desserts. Guar is an all-natural ingredient, unlike other common thickeners such as modified food starch and cellulose gum (CMC), and has been shown to provide important health benefits. Numerous studies have shown that the consumption of Guar Gum lowers serum Low Density Lipoprotein (LDL), cholesterol and triglycerides and increases glucose tolerance. Additionally India is also the major exporter of guar gum to the world; it exports various forms of Guar products to a large number of countries. The country has exported 494101.27 MT of guar gum to the world for the worth of Rs. 4169.56 crores / 646.94 USD Millions during the year 2017-18.

In spite of these multilayered benefits the potential of Guar gum has not been fully exploited. Gaps exist in guar gum related research process and product development for industry-specific value-added products. The market is plagued by poor market linkages with farmers and unstable trade policies. Some of the other issues include presence of only a few high yielding varieties (due to the lack of genetic variations in the natural population), lack of certified seed development and dissemination. Under the manufacturing setup, identifying and derivativizing of Guar as a value added variant also remains a challenge. The above issues become more pronounced as the research institutions/ agricultural universities face fund crunch for Guar related work

B. Current Scenario

Guar has evolved from being used for domestic and ruminant feed purpose to finding use in industry. Owing to new technological advances, the natural gum property of guar had found varied applications in food, pharma and oil Industries. The future of guar industry is for specialized applications and derivatives. It is envisaged that the industry will move towards product differentiation to meet the specific and niche demand. For example- in food industry there is growing preference for bio-degradable, non-polluting and organic, products. . This gives ample scope for leveraging investment, knowledge management, technology and partnerships for technology sharing and transfer.

In view of the above, there is a need to promote Research and Development for Guar based products. Consistent funding for Research from government is required.

C. Goals and Objectives of the Program

- Primary scope of the RFP is to support R & D gaps of guar and its derivatives for the long-term profitability and sustainability of guar industry in India.
- Efforts will be encouraged to develop the industry linkages, infrastructure, value addition, research & development for tapping the potential of this natural resource.
- Scale up of lab level technologies available with the Industry/academia leading to product development would be supported individually or in partnership mode.

D. Areas to be supported

- Development of Guar based nutraceutical products for life style disorders
- Development of guar gum as an import substitute for various value added chemicals like hydroxy ethyl cellulose, hydroxy propyl starch.
- Development of new varieties of guar with better yield/viscosity/gum content
- Improved extraction technologies to increase the yield of gum and its affordability
- Technology identification for the application of guar gum in construction Industry with a focus on development of guar based cellulose.
- Technology for cationic guar gum for hair care products
- Technology for cationic guar gum to use in Clean Ganga Mission.
- Development of guar gum based Nanocomposites
- Technology for development of novel by-products from guar gum.
- Technology for production of Industrial grade slick water
- Technology to modify/process the guar at split level and not at the powder level.
- To develop modification(s) of Guar for oil industry as a substitute for the polymer import
- QA/QC methods for assessing the quality of guar gum
- Development of high value guar derivatives such as double derivative – Carboxy Methyl Hydroxy Propyl Guar (CMHPG) and single derivative -namely Carboxy Methyl Guar (CMG) and Hydroxy Propyl Guar (HPG)

E. Areas that will not be considered:

- a) Exploratory research ideas not leading to a product or having a commercial potential
- b) Projects with a low innovation component.

F. FUNDING MODALITIES

Category-I: Development of Proof of Concept (project to reach TRL - 3 at its completion)

1. **Funding Support:** Grant-in-aid assistance up to Rs. 50 lakhs (The nonrecurring cost should not be more than 10% of the total project cost)
2. **Eligibility:** This category is open to:
 - a. Company: Start-up company only (the incorporation date of the Company should not be earlier than 10 years from the date of Publication of the RFP).

- b. Limited Liability Partnership (LLP)
 - c. Indian Academic institutes/universities with or without industry partner
 - d. Academic Individuals: Defined as individuals, such as working/registered with any R&D Institute/organization/University/College etc. and must having Indian Nationality. (Applicant has to be physically incubated with an incubator or must have the permission from the R&D Institute/University/college etc. where he/she is presently working/registered, to use the desired R&D infrastructure/facilities specifically for the project purpose, if available)
3. **Duration:** Project duration can be up to 18 months

Category-II: Early Transition /Validation of existing R & D hypothesis in simulated environment (project to reach TRL-6 at its completion)

- 1. **Funding Support:** Grant-in-aid assistance on a cost sharing basis up to Rs. 100 lakhs
- 2. **Eligibility:** This category is open to:
 - a. Company/LLP as the primary applicant with or without Academia or other companies as collaborators
 - b. Academic institute with one or more validating partners of which at least one is a company
- 3. **Duration:** Project duration can be up to 24 months

Category-III: Scale up of technology to be demonstrated in operational environmental conditions (Project to reach TRL 7 and above at its completion)

- 1. **Funding support:** Grant-in-aid assistance on a cost sharing basis
- 2. **Eligibility:**
 - a. Company/LLP as the primary applicant with or without Academia or other companies as collaborators
 - b. Academic institute with one or more validating partners of which at least one is a company

Duration: Project duration can be up to 36 months

In addition, Consortia of Industry and academia working for a common problem in guar gum would also be supported based on the need and relevance of the product development. This would be in the in the partnership mode between the relevant industry and the research organization.

Note: For Category II and III, when academia applies as primary applicant, the project should be for validating or scale-up of the PoC developed in their laboratory. In such cases, there has to be one or more validating partners of which at least one is a company. The guidelines of the CRS scheme of BIRAC will be followed for such an approach.

E. BASIC ELIGIBILITY:

The proposals can be submitted by:

a. Company (Start-up, Small, Medium or Large) incorporated under the Companies Act, 2013 having a minimum of 51% of the shares of the Company to be held by Indian Citizens (Indian passport holders).

b. Limited liability Partnership (LLP) incorporated under the Limited Liability Partnership Act, 2008 having a minimum half of the persons who have subscribed their names to the LLP document as its Partners should be Indian citizens

NOTE: The applicant Company/LLP should have adequate in-house R&D facility to address the project implementation (which shall be evaluated during the site visit) or incubated with any of the recognized incubation facility. Although, DSIR certificate is not mandatory, but if it is available the same can also be considered.

c. Academia (Public or Private Research Institute, University) having a well-established support system for research. The institute should have been established in India and have affiliation to national affiliation bodies such as UGC/ AICTE/ MCI etc., or any equivalent recognition certificate or any other Public/Government supported organization

d. Academic Individuals (AI) Defined as individuals such as working/registered with any R&D Institute/organization/University/College etc. and must having Indian Nationality. The applicant has to produce a No Objection Certificate (NOC) from the head of the organization clearly indicating that the organization has policies in place to allow the applicant to accept funding support (if successful) as an individual. (Applicant has to be physically incubated with an incubator or must have the permission from the R&D Institute/University/college etc. where he/she is presently working/registered, to use the desired R&D infrastructure/facilities specifically for the project purpose, if available)

Application can be submitted by any of the above entities (a - d) jointly or severally in accordance with the criteria of specific category.

NOTE: Applicants and Co- applicants should not have any other legal disqualification that will prohibit them from participating in the scheme process and execution of necessary agreements thereafter.

F. Payment of Royalty: Royalty payment obligations (5% of Net Sales) shall become applicable for funding assistance if the technology/product is commercialized.

G. SCOPE OF INTELLECTUAL PROPERTY GENERATED DURING THE DURATION OF THE PROJECT

- a. The new Intellectual Property (IP) rights belong to the recipient to funds
- b. It is the responsibility of the Fund Recipients to protect the New Intellectual Property (New IP).
- c. Applicants with collaborators shall have MoUs in place.
- d. Project having the final deliverable as TRL-9 shall have royalty payment obligations

NOTE: New IP means intellectual property generated during the conduct of the Project by the Fund Recipient(s), but excluding the intellectual property generated by the Fund Recipient(s) before execution of the Grant-in-Aid Letter Agreement (GLA).

H. PROJECT MONITORING & MENTORING

Project Monitoring Committee (PMC)

The projects shall be monitored/and mentored regularly by an Expert Committee constituted by BIRAC for each project. Site visits shall be conducted by specially constituted Expert Committees comprising two to three Technical experts and one financial expert.

The Project Monitoring Committee (PMC) is responsible to;

- a. Monitor the progress of the Project in conform it to the outputs, milestones, targets and objectives is contained in the Agreement.
- b. Based on the foregoing, to assess and recommend:
- c. The release of next instalment or part release thereof by the BIRAC.
- d. Revision of project duration
- e. Closing or dropping or modifying any of the components of the Project, within the overall approved objectives, budget and time-frame,
- f. Inclusion of additional industrial/institutional partner(s), if the applicant requests involvement of such partner(s), in the overall interest of the Project, mentor(s) to overcome any technological problem faced in the Revision of the financial assistance.
- g. To advise on issues related to securing of IPR; and
- h. To advise on any other matter as referred to it by BIRAC and/or otherwise reasonably necessary for effective discharge of its duties and/or achievement of aims and objectives of proposed Scheme.

I. Reporting of Progress

- a. On Successful completion of each Milestone, the applicant will be required to submit a detailed Milestone Completion Report (MCR) as per prescribed format.
- b. The MCR will be assessed by the PMC for its completion. On recommendation of the PMC, the next Milestone budget is released.
- c. The Applicant will have to submit adult certified Statement of Expenditure for the every 30th September and 31st March.
- d. Format for Milestone Completion Report (MCR), Utilization Certificate and Statement of Expenditure will be made available as per requirement.

II. TERMS & CONDITIONS AND REQUISITES FOR FUND DISBURSEMENT

Agreement of funding

- On announcement of Award, all concerned applicants need to sign the Grant-in-aid Letter Agreement (GLA) with BIRAC.

III. OTHER REQUISITES FOR FUNDS DISBURSEMENTS TO APPLICANTS

In addition to signing of agreement between all the concerned parties, following requirement needs to be completed before the first instalment can be released:

- a. A board Resolution needs to be passed for acceptance of the Grant-in-aid offer by the BIRAC, in case of a company/trust/society as applicable.
- b. Share holding pattern as per BIRAC format (companies/trust/societies having a minimum of 51% Indian shareholders/trustees/members are only eligible).
- c. Opening up a No-Lien Account with a scheduled/nationalized Banking in case of a Company.
- d. Letter of Authorization in case of Institute in the prescribed format of BIRAC.
- e. MoUs related to IP arrangements/collaborations/outsourcing, etc. needs to be in place.

IV. ROYALTY GUIDELINES-Payment of Royalty

- a. The Company shall pay royalty to BIRAC at the rate of 5(five) percent on annual Net Sales of the product(s) developed with BIRAC's assistance. Payment of royalty shall fall due beginning with the first sale of the product(s) and the liability to pay royalty will be as per BIRAC norms.
- b. Royalty for each financial year shall be payable to BIRAC within 60(sixty) days of close of corresponding financial year.
- c. If the Company gets grant-in-aid assistance for more than one Project that will culminate into the same Product(s), then the Company shall pay royalty to BIRAC at a cumulative rate of 7(seven)percent on annual Net Sales of the product(s) developed with BIRAC's assistance in the same manner as provided above under subsection(i).
- d. If the Company gets grant-in-aid assistance for more than one Project that will culminate into the distinct Product(s), then the Company shall pay royalty to BIRAC at the rate of 5(five) percent on annual Net Sales of each such distinct Product(s) developed with BIRAC's assistance in the same manner as provided above under subsection(i).
- e. If the Company intends to transfer or sell the Product it shall take prior written permission from BIRAC and BIRAC will recover the Royalty amount or 5% of the resultant income excluding excise duty.

V. ACKNOWLEDGEMENT OF BIRAC SUPPORT

Acknowledge the assistance of BIRAC while publishing, marketing the resultant Product or presenting in any manner the details of the Project, its progress or its success along with the "Disclaimer" that reference there into any specific commercial product, process, and views or service by tradename, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or assuming liability of any sort by the BIRAC. Use of BIRAC logo is not permitted without written approval.

CONTACT INFORMATION

BIRAC Website: www.birac.nic.in

Contact Person for query and feedback:

- ❖ Dr. PKS Sarma, GM and Head-Technical, spakala.birac@nic.in
- ❖ Dr. Prachi Agarwal, Senior Manager- Projects, pagarwal.birac@nic.in