



सत्यमेव जयते

**DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF INDIA**

Call for Proposals

on

“Traditional Fermented Foods of North Eastern Region of India: Health Implications and Development of safe/ hygienic food products”

Background:

Fermented foods hold a strong place in almost every culture across the globe and represent an essential part of the human diet. At present, nearly 5000 varieties of fermented foods and beverages are being produced and consumed globally. India has a plethora of ethnic fermented foods particularly in the North Eastern Region of India. There are about 250 different types of traditional fermented foods and alcoholic beverages (TFFs) that have been prepared and consumed for centuries by the ethnic people of Northeast India. These foods have been traditionally linked with health benefits. However, there is not enough data to support the claimed health benefits of the fermented food or understand their clinical implications. More recently, the consumption of some of these fermented foods have been associated with foodborne infections and chronic diseases. This necessitates studies on complete understanding of the composition and functionality of the fermented foods to ensure safe and hygiene product development. These studies will also open up the possibilities for commercializing or promoting fermented food as functional foods, probiotics/prebiotics, nutraceuticals, thereby benefitting the local communities.

Department of Biotechnology have been at the forefront of funding research in North Eastern Region of India to scientifically address challenges specific to the region. In order to promote safe production and consumption of indigenous traditional foods of the NER, the Department of Biotechnology, Govt. of India invites Call for Proposal on **“Traditional Fermented Foods of North Eastern Region of India: Health Implications and Development of safe/ hygienic food products”** with the aim to:

- (i) Scientifically validate the traditionally claimed beneficial effects of TFFs of NE India and study their health implications.
- (ii) Safe and hygienic production of the TFF of NE India for their promotion as functional food and nutraceuticals.

Shortlisted fermented food items:

The proposal should focus on any one of the shortlisted traditional fermented foods (TFF) items of NER as mentioned below:

S.No.	Type of Food Item(s)	Name of the Traditional Fermented Food
1	Bamboo shoot products	Soibum (Manipur), Hikku (Arunachal Pradesh), and other local names among NER tribes
2	Soybean products	Kinema (Sikkim), Hawaijar (Manipur), Axone/Akhuni (Nagaland), Peruyyan (Arunachal Pradesh), Tungrymbai (Meghalaya) and other local names among NER tribes
3	Meat products	Sa-um (Mizoram), Ashikumna/ Thevochie (Nagaland) and other local names among NER tribes
4	Fish products	Ngari (Manipur), Shidol (Assam/Tripura), Lona ilish (Tripura), Tungtap (Meghalaya) and other local names among NER tribes
5	Milk products	Chhurpi (Sikkim/Arunachal Pradesh), Mishti Doi (Assam), Sangom-aphamba (Manipur) and other local names among NER tribes
6	Rice/millet-based low-alcoholic beverages	Apong (Assam/ Arunachal Pradesh), Tongba (Sikkim), Atingba (Manipur), Kodo Ko Jaanr (Sikkim) and other local names among NER tribes
7	Leafy vegetable products	Gundruk (Sikkim/ Arunachal Pradesh), Inziangsang (Nagaland/ Manipur) and other local names among NER tribes

Key Research Areas:

The network proposal must address all of the following research aspects for the selected fermented food item.

Vertical I: Scientific validation of the traditionally claimed beneficial effects of TFFs of NE India and studying their health implications

- Characterization of microbial communities of the selected TFF of NER using advanced molecular tools to identify both beneficial and pathogenic microbiota
- Proximate and nutritive analysis of the selected TFF, including protein digestibility and micronutrient bio-availability
- Scientific validation of traditional claims on the health benefits of the selected TFF through short-term clinical trials in a Randomized controlled trial (RCT) format to look at the biomarkers such as haemoglobin, vitamin B12 or more measurable outcomes.
- Case-control study involving two contrasting populations (exposed vs unexposed to TFFs) to look at the differences in the longevity and prevalence of major chronic diseases.

Vertical II: Safe and hygienic production of the TFF of NE India for their promotion as functional food and nutraceuticals

- a) Selection of starter cultures from dominant beneficial microbes evolved during natural fermentation to produce uniform quality and safe fermented foods. The fermentation products developed using these starter cultures should be amenable to clinical trials.
- b) Safety studies for starter cultures (single/mixed), and fermented foods (traditional/controlled) using animal models. Research towards formulating effective guidelines for commercializing starter culture for controlled fermentation and entrepreneurship promotion.
- c) Optimization of production processes for development of good quality, hygienic and safe fermented foods of North Eastern Region with potential for commercialization or promotion as functional foods, nutraceuticals etc., as per the FSSAI guidelines.
- d) Scale-up and storage stability studies to enable eventual commercialization of the TFF through Startups and Self-Help Groups (SHGs).
- e) Studying nutritional, biochemical, sensory, flavour analysis etc., of the fermented products developed using optimised process.
- f) Studying biochemical changes during fermentation (traditional/controlled) of the fermented food products using microbial succession studies and advanced metabolomics approaches to determine the novel metabolites / bioactives / new chemical entities (NCEs).
- g) Isolation and characterization of microbial resources from TFFs for production of nutraceuticals that can be applied as food additives.
- h) Development of probiotics/prebiotics products using microorganisms from traditional fermented foods.

Who can apply?

Scientists/Clinicians/Researchers/Academicians working on regular positions in recognized Research Institutions/Medical Colleges/Academic Institutions/Universities having relevant research experiences on the proposed area of research, and desirous of undertaking research activities as enumerated above can submit proposals against this Call. The relevant research experiences must be evidenced through high quality research publications in the SCI indexed journals. For non-government institutions to participate, DSIR-recognition as a Scientific and Industrial Research Organization (SIRO) is mandatory. The proposal must be forwarded by the executive authority of the institution, and the host institution should undertake the overall responsibility of implementing the project including following of relevant statutory requirements/norms/guidelines/procedures.

How to Apply?

Interested and eligible researchers should submit project proposals online through DBT electronic project management system 'eProMIS' (<http://dbtepromis.nic.in/Login.aspx>) under the "Submit Proposal under Calls" selecting the area 'NER Programme'. The soft copy of

the final version of the proposal submitted in eProMIS along with all annexure / declarations etc. should be sent to the Programme Officer as a single PDF file by email to: nerdiv@dbt.nic.in

The proposals which are not submitted through DBT eProMIS portal will not be considered. In case of any technical difficulties in the eProMIS portal, please contact eProMis portal administrator in the email ID: epromis.dbt@nic.in

Mode of Selection:

The investigators across the country from the recognized organizations are encouraged to submit the proposals. The shortlisting of proposals will be done as per the DBT norms and will be based on the scientific merit of the submitted proposal.

Note:

- The research proposals may be single institution and/or multi-institution involving collaborations either within the NER institution(s) and/or with institutions/organizations outside NER. ***Involvement of NER institution(s)/organization(s) is mandatory and the 'Centre of gravity' of the research activity should remain in NE.***
- For multi-institution proposals involving collaborators from institutions outside NER, at least 60% of the total project budget should be strictly allocated to the NER institute(s).
- Project proposals with Industry collaboration will be encouraged. However, Industry will not be funded as part of the grant.
- Incomplete applications and those which do not fulfil eligibility criteria will not be considered for evaluation.
- A flowchart/schematic illustration explaining the concept or methodology of the proposed scientific research studies along with role of the partnering institutions must be submitted along with proposal.
- The FSSAI guidelines need to be referred for the selected food item. This entire programme will be aligned with the FSSAI rules and regulations. Hence, the investigators are encouraged to visit <https://www.fssai.gov.in/cms/food-safety-and-standards-regulations.php> for more details.

Contact details:

Any queries in this regard can be addressed to:

Dr. Vaishali Panjabi, Scientist 'F' (Email: nerdiv@dbt.nic.in) and Dr. B. Vignesh Kumar, Project Scientist (Email: medcon2.nerbpmc@dbt.nic.in), Department of Biotechnology, CGO complex, New Delhi 110003.

Last Date of Submission: July 17, 2023