ISO – 9001-2000
ORGANISATION

GANESH SCIENTIFIC RESEARCH FOUNDATION
AN ISO-9001-2000 RESEARCH AND TESTING LABORATORY

(Approved Testing and Research House by the Ministry of Food and Consumer Affairs, Government of India)

ANNUAL REPORT 2013-14

64-65, Sat Guru Ram Singhji Marg, Kirti Nagar, Industrial Area,
New Delhi – 110015
Telephone: 011-25102814; Fax: 011-25195045
Email: gsrfdelhi@gmail.com

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THE TRUST

GANESH SCIENTIFIC RESEARCH FOUNDATION is a Public Charitable Irrevocable Trust, registered under the Indian Trust Act, 1882 (Registration No. 554 dated 20.02.1978). The objectives of the Foundation are to undertake, aid, assist, conduct, carry on or help to carry on scientific research for the extension of knowledge in the field of natural and applied sciences.

The foundation is an ISO-9001-2000 Research and Testing laboratory.

The Foundation is recognized by

- The Ministry of Science and Technology under the scheme of recognition of Scientific and Industrial Research Organizations.
- The Edible Oil Commissioner, Ministry of Food and Consumer Affairs, Govt. of India, under edible oils packaging order 1998 as a competent testing laboratory.
- The Government of the National Capital Territory of Delhi, under the Delhi Edible Oils order 1998 as a competent testing laboratory.
- The Provident Fund Commissioner

The Foundation has been associated with

- The Bureau of Indian Standards as a Member of the Sectional Committee on Oils and Oilseeds.
- Central Committee for Food Standards, Government of India on its Oils and Fats Subcommittee. The draft specifications prepared by the Foundation on partially hydrogenated soybean oil and partially hydrogenated winterized soybean oil have been approved by the CCFS.

REGISTRATION/CERTIFICATION

- Certified under Importer-exporter code.
- Registered under Foreign Contribution Regulation Act for the purpose of receiving Foreign Contribution for Research.
- Registered under 12A of Income Tax Act.
- Exemption to Donor is approved by Income Tax Department, Govt. of India; under 80G/(5) (VI) of IT Act 1961.

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Board of Trustees of Ganesh Scientific Research Foundation (2014).

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Acted as

- Consultant, Department of Animal Husbandry & Dairying, Government of India.
- Regional Director, National Dairy Development Board.
- Managing Director, Rajasthan Co-operative Dairy Federation, Jaipur,
- Director on the boards of the State Dairy Federations of Punjab, Haryana, Rajasthan, Uttar Pradesh, Himachal Pradesh, Gujarat Oilseeds Federation and many dairy co-operative unions.
- Member of the Rajasthan State Planning Board, and Animal Husbandry and Dairy Subcommittee of the National Planning Commission for the Tenth Plan.
- Held International assignments with the World Bank/NDDB for Dairy - Sector Review in Sri Lanka, Feasibility of Dairy Development in Eastern Nepal, and for studying joint sector collaboration between India and Sri Lanka, and India and Nepal.
- Resource Person with the Asian Productivity Organization Tokyo.
- USAID Consultant for dairy projects.
- Leader/member of many professional and commercial delegations from the NDDB to Denmark; Vietnam; Thailand; United Kingdom; Sri Lanka; Federal Republic of Germany; and Nepal.

Email: dr.rskrsk@gmail.com,rskay@indiatimes.com

2. MR. ASHWANI K. SHARMA,
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Proprietor Pegasus Technologies
Acted as

- President, Oil Technologists' Association of India, North Zone.
  Associated with various Trusts, RWA, NGO's,

Email: tech.pegasus@gmail.com

3. DR. S . N. NAIK

Professor
CRDT, Block-III,
Indian Institute of Technology Delhi
Hauz Khas New Delhi-110 016, India.
Email:snn@rdat.iitd.ac.in,sn_naik@hotmail.com

4, Mr. D. N. PATHAK,

Corporate Advisor & Consultant, International Trade and Development
Adviser at India Pulses & Grains Association, Advisor at Indian Oilseeds Produce Export Promotion Council, Advisor at Corlim Marine Exports Products.
Acted as

- Executive Director at All India Rice Exporters' Association,
- Executive Director at Soybean Processors' Association.
- Executive Director at Indian Vegetable Oil Producers' Association.

Email: dnp@dnpathak.com,dnpathak@gmail.com

5. Mr. S P KAMRAH,

Secretary General, Indian Vanaspati Producers' Association
Email s.p.kamrah@gmail.com

6. DR. M. K. KUNDU,

M.Tech, D.Sc, FABI (USA),
International Consultant, Edible oil technology,
Member (Scientific Panel), Food Safety and Standards Authority, Government of India.
Acted as –

- Chief Director, VOP Controller and Edible Oils Commissioner Directorate of Vanaspati,Vegetable Oils and Fats , Ministry of Consumer Affairs, Food and Public Distribution ,GOI,
- Director,Central Food Lab,Kolkata,
- Advisor,Central Warehousing Corporation

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Primarily in his capacity as Chief Director, VOP Controller& Edible Oil Commissioner as also Director, CFL, Kolkata Dr. Kundu was Chairman/Member Secretary/Member of a no. of interministerial committees

Internationally, Dr. Kundu actively contributed at various forums, namely UNIDO Conference at Vienna International Dialogue on Micronutrient Malnutrition held at Ohawa, Canada, FAO-WHO Jt. Food Standards Programme meetings held at London, ISO/Codex Committee Meeting on Food Standards at Budapest. In Collaboration

with World Bank, Dr. Kundu organized a National Seminar on Oilseeds Dissemination in September 1997 at Delhi. He also prepared two Project Reports for FAO in June 2012, on invitation of AOAC,the leading international organization dedicated to analytical excellence. Dr. Kundu made a Presentation at the AOAC-SPIFAN Conference at Maryland ,USA-a special session was organized for the presentation on some possible areas of Technological Cooperation in the field of Food Safety and Standards.
Email:mihir_kundu@yahoo.com

AUDITOR

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Canara Bank, Connaught Place, New Delhi

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Administrative Committee

Research Advisory Committee

Organization Restructuring Committee

Staff Appraisal Committee

Project Monitoring Committee

Price Fixation Sub-Committee

Preface

1. The Ganesh Scientific Research Foundation has been preparing its annual reports generally to meet with statutory requirements. This report apart from giving the statutory information for the financial year 2013-14, also documents the achievements of the Foundation since its inception.

2. It is also a matter of great pride to announce that the Foundation has been notified in July 2008 as the ISO 9001-2008 research and testing laboratory.

3. The Ganesh Scientific Research Foundation since its establishment in 1978, has been actively involved in undertaking research projects on behalf of the various government research and development institutions, private and public bodies. The Foundation has also served the nation through associating actively in standardization of various techniques and parameters for production and processing of different products as well in standardizing the methods of testing the purity and adulterants in many edible products. The Foundation has also been associated with private and public organizations in product development and diversification. Many government and private institutions have benefited from the research and developmental back up provided. It should be noted that most of the activities have been carried out by the Foundation with no financial benefits accruing to it directly or indirectly.

4. The Foundation, since its inception has been the research and development arm of the Hindustan Vegetable Oils Corporation Ltd (HVOC) until 2001, after which the linkage weakened because the oil & vanaspati production at the HVOC was closed. The Foundation has also been associated closely for research development with the Directorate of Vanaspati, Oils and Fats, Ministry of Consumer Affairs, Food & Public Distribution, Government of India. The Foundation continues to undertake analytical assignments, preparation of status

report on specific topics and research projects on behalf of this Directorate.

5. The proximity to the government is obvious from the fact that the Foundation, on behalf of the Directorate has undertaken many important projects like – the Blending of Oils; Development of Soya Dal; Recovery of Oil from Spent Bleaching Earth; Preparation of Industrial Lipases; Study on Shelf Life of RBD Palmolein; Study on the use of Mustard Oil in Vanaspati; Upscaling Inter-esterification Process to Pilot Plant Stage; Preparation of Low Trans-nutritious Margarine and Shortening Fat Bases; Development of Micro-Nutrient enriched High Performance Multiple Blended Oil Mediums; Development of High Performance Oil Blends; Development Of Medium Chain Triglycerides; Recovery, Upgrading, Modification of Lecithin from Rice Bran Oil; Detection of Argemone Oil in Edible Oils; Scale Up Trial of Partial Hydrogenation of Soybean Oil; Recovery of Useful Bye-products Like Lecithin from Indigenous Non-traditional Oil Sources; Development of Salolein and Mahuaolein as Direct Cooking Oil Analogous to Palmolein.

6. The Foundation has, on behalf of the Bureau of Indian Standards and the Central Committee on Food Standards, established and standardized methods for colour developments in Baudoin test used for detection of adulteration of sesame oil and vanaspati; development of analytical methods for detecting adulteration of oils in oil-admixture; detection of linseed oil in soyabean oil; detection of taramira, argemone, linseed oil, karanja oil, ambadi seed oil, in other oils.

7. For the BIS, the Foundation has helped in preparation of Draft Standards for: sensory evaluation of edible fats and oils; criteria of edibility of fats and oils; detection of rice bran oil in other oils; and method of Baudoin test.

8. It is a vision of the Trustees of the Foundation to strengthen the existing oil laboratory and improve the existing facilities to conduct research in the areas of Processed Foods Development; and a

laboratory for Foods Analysis and Testing with competence in testing of residues of pesticides, antibiotics, minerals, toxins and anti-nutritional factors. Principal objectives of the foundation are to ensure absolute food safety at entire user levels and to provide technological know-how for development of nutritious and safe food items for Indian consumers.

Dr J Adhikari

Director General

THE REPORT

1. PAST ACHIEVEMENTS

1.1. This report, apart from giving the statutory information for the financial year 2013-14, also summarizes the achievements for the past since the inception of the Foundation. The Ganesh Scientific Research Foundation has since its establishment in 1978, been actively involved in undertaking research projects on behalf of the various government research and development institutions, private and public bodies. The Foundation has also served the nation through associating actively in standardization of various techniques for production and processing as well as in standardizing the methods of testing the purities and adulterants in many edible products. The Foundation has also been associated with private and public organizations in product development and diversification. Many government and private institutions have benefited from the research and developmental back up provided. It should be noted that most of the activities have been carried out by the Foundation at cost with no financial benefits accruing to it directly or indirectly.

1.2. The Foundation had been actually a research and development arm of the Hindustan Vegetable Oils Corporation Ltd , and the Directorate of Vanaspati, Oils and Fats, Ministry of Consumer Affairs, Food and Public Distribution, Government of India. The Foundation continues to undertake analytical assignments, preparation of status report on specific topics and research projects on behalf of Directorate of Vanaspati and other departments of Central and State Governments.

2. RESEARCH AND DEVELOPMENT

As mentioned, Ganesh Scientific Research Foundation since its establishment in 1978, has been actively involved in undertaking research projects assigned by various Government Departments and industrial organizations, private and public bodies in the fields of oil and oil-based products, animal feed, food and related materials, biofuels, oil substitutes etc. Research was conducted on diverse aspects of food safety and nutrition, micronutrient enrichment of oils, oil based products and common food items, detection of adulteration and contaminants, utilization of indigenous nontraditional resources to increase the availability of food, oil and animal feed, detoxification of nontraditional oilcakes for utilization as animal feed, micronutrient enrichment and recovery of value-added by-products such as wax, lecithin, vitamin E, oryzanol and fatty acids, from the vegetable oil refining industry, development of interesterified fat based Vanaspati, margarine etc.

The Foundation has conducted successfully many important projects on behalf of the Directorate of Vanaspati, Oils and Fats, Ministry of Consumer Affairs, Food & Public Distribution, Government of India, Council of Scientific and Industrial Research, Ministry of Food etc.

Some project titles are Blending of Oils; Development of Soya Dal; Recovery of Oil from Spent Bleaching Earth; Preparation of Industrial Lipases; Study on Shelf Life of RBD Palmolein; Study on the use of Mustard Oil in Vanaspati; Upscaling Inter-esterification Process to Pilot Plant Stage; Preparation of Low Trans-nutritious Margarine and Shortening Fat Bases; Development of Micro-Nutrient enriched High Performance Multiple Blended Oil Mediums; Development of High Performance Oil Blends; Development Of Medium Chain Triglycerides; Recovery, Upgrading, Modification of Lecithin from Rice Bran Oil; Detection of Argemone Oil in Edible Oils; Scale Up Trial of Partial Hydrogenation of Soybean Oil; Recovery of Useful Bye-products Like Lecithin from Indigenous Non-traditional Oil Sources;

Development of Salolein and Mahuaolein as Direct Cooking Oil Analogous to Palmolein etc

Department of Bio-technology, Government of India identified GSRF as a participant in a multi-institutional project to conduct research on "Detoxification and Utilization of Key Agro-Forest Based Non Conventional Oil Cakes in the Feeding of Livestock'. In addition, the Foundation had also been associated in another DBT financed research project on biotech feed.

The Foundation has served the nation also through active association in standardization of various techniques and parameters for production and processing as well as in standardizing methods of testing the purity and adulterants in edible products. Along-with, the Foundation has been associated with private and public organizations in new product development and diversification.

The Foundation has, on behalf of the Bureau of Indian Standards and the Central Committee on Food Standards, established and standardized methods for colour developments in Baudoin test used for detection of adulteration of sesame oil and vanaspati; developed analytical methods for detecting adulteration of oils in oil-admixture; detection of linseed oil in soyabean oil; detection of taramira, argemone, linseed oil, karanja oil, ambadi seed oil, in other oils. GSRF has helped in preparation of Draft Standards for: sensory evaluation of edible fats and oils; criteria of edibility of fats and oils; detection of rice bran oil in other oils; and method of Baudoin test.

3. WORK FOR FSSAI

Food Safety and Standards Authority of India (FSSAI) conducted a meeting in Setember,2009 to discuss the main problematic issues being faced by the edible oil Sector, to review the current situation and consider the options available to frame an international standard

regulatory system. Director (Lab.) attended the meeting held under the Chairmanship of Dr. P.I. Suvrathan, Chairperson, FSSAI.

As required by FSSAI, two concept notes were prepared for the purpose and submitted:

- Edible Oils Packaging Order in 1998-A review note. The note consisted of Background of the order, Salient features, Rationale, Food laws in U.K and USA followed by Recommendations.
- A Concept note on Problems found by Edible Oil Sector and suggested measures to overcome the constraints. The note was circulated in the meeting and the issues raised were appreciated.

4. STATUS REPORTS ON OIL AND FOOD TECHNOLOGY FOR GOI

- Status report on "Blending of Oils to Produce Nutritionally Superior Edible Oil Mediums", for the Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Food and Consumer Affairs, Government of India.
- Status report on "Analytical Characteristics and Stability of Refined Palm Oil Samples", for the Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Food and Consumer Affairs, Government of India.
- Status report on "Medium Chain Triglycerides for Technology Mission on Oilseeds, Pulses and Maize", Council of Scientific and Industrial Research, Government of India.
- Status report on "Detection of Genetically Modified Oils", for the Directorate of Vanaspati, Vegetable, Oils and Fats, Ministry of Food and Consumer Affairs, Government of India.
- Status report on "Repeated Frying of Vegetable Oils" for the Ministry of Food and Civil Supplies, Government of India.
- Status report on "Shelf Life of Food Products Based on Soybean".
- Status report on "Hydrogenation of Mustard Oil".

5. RESEARCH AND ANALYTICAL WORK DONE FOR INDUSTRIES

Dhara Vegetable Oil and Foods Company Ltd

- Study on use of antifoam materials to improve frying performance of edible oils.

A P Solvex Hyderabad

- Study on use of antifoam materials to prevent loss of antioxidants/micronutrients from edible oils during frying.
- Study on oxidative stability of rice bran oil is other common edible oils by AOM method.
- Value addition to the bye-products of Rice Bran oil processing – Rice Bran wax, Triacontanol and, oryzanol, lecithin.
- Recovery of gamma Oryzanol from acid oil**.**

Liberty Oil Mills, Mumbai

- Status report on different methods of sampling of palm/palmolein and determination of carotene level of palm/palmolein samples by different methods.
- Consultancy on significance of different methods of determining rancidity of oils with special emphasis on Kries test and Anisidine value.
- Status report on degradation of colour developed by Baudoin test.
- Investigation on Phosphorus level of raw palm oil samples.
- Consultancy on interesterification methods yielding PUFA rich vanaspati substitute/bakery shortening.

ITC Agrotech Ltd, Secunderabad

- Preparation of status report on “Micronutrient profile of Ricebran oil”.
- Study on trans fatty acid content of high temp deodorized oils.
- Analysis of Vanaspati samples,
- Analysis of Olive oil samples for sterol, polyphenol, tocopherol.

- Effect of DMPS (antifoam agent) on frying performance of Sundrop SuperLite oil
- Analysis of statutory parameters, nutritional qualities and frying performance of blended oil formulations

Reliance Industries:

- Extensive Analysis of animal feed samples for normal analytical characteristics, trace metals, urea nitrogen.

Pegasus technologies

- Production of Bio-diesel from Acid Oil and Palm Fatty Acid Distillate.

Adani Wilmar Ltd

- Assessment of the performance evaluation of the heavy duty frying oil developed by Adani Wilmar Ltd.

6. ANALYTICAL WORK

GSRF conducts analytical assignments regularly on behalf of leading edible oil and food industries of India. Analytical work includes full analysis of edible oil and food samples (according to PFA/BIS/Agmark specifications); analysis of fatty acid composition, vitamin components, micronutrients, presence of contaminants with a view to ensure conformance of quality products to specific standards.

The Industries which sent their samples for analysis of oil, food and animal feed included Dhara Vegetable Oil and Foods Company Ltd., HAFED Oil Mills, NAFED, Adani Wilmar Ltd, Recon Oil Industries, New Delhi, Chemical Construction International Pvt Ltd, New Delhi, Raj Agro Mills, New Delhi, Sethia Oil Mills Burdwan and Sahapur units, JVL Agro Foods, Alwar and others, Rites Ltd,Kwality Dairy Ltd, Particular mention may be made of Detailed analysis of packaged foods

according to labeling requirement (Prevention of Food Adulteration Rules, 1955).,Analysis of double low variety of canola (low erucic acid, low glucosinolate) given by TERI, detailed analysis of biodiesel samples and raw materials (fish oil, fatty acid distillates etc) according to ASTM specifications.

GSRF acts also as information and advice bureau by offering consultancy service in the form of status /feasibility reports, information papers, problem diagnosis, devising cost-effective solutions and updating the latest R&D findings

7. AWARD ACHIEVED BY GSRF

Dayabhai Vadalia Memorial Award for the paper for the 'Glucosinolates in the Seeds of Indian Brassicas and Eruca Sativa' J. Adhikari, S. Adhikari and K. T. Achaya, published in vol. XXI No. 11, P-13, 1989, Journal of Oil Technologists' Association of India, for being adjudged the best paper of the year

8. GSRF RESEARCH USED BY GOVERNMENT OF INDIA

Research outcomes of GSRF were utilised by Government at times to lay down standards e.g. results were utilised to change the limits of minimum carotene content (250 ppm from 450 ppm in imported crude palm oil by Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Food and Consumer Affairs, Govt. of India. In another instance, on the basis of research work done on partially hydrogenated soyabean oil, Oils and Fats subcommittee Central Committee for Food Standards; Govt. of India asked GSRF to make a draft specification on partially hydrogenated soybean oil and partially hydrogenated winterized soybean oil. The draft specifications prepared by GSRF was approved by the Chairman of Oil & Fats Sub-Committee of CCFS.

9. ORGANISATION OF NATIONAL LEVEL WORKSHOP AND SEMINARS

GSRF has organized national level workshop and seminars on themes significant in national context, e.g., Organisation of

i) Workshop on 'Modern Trends in Oil and Allied Industries (1985), Supported by Modi Industries

ii) Seminar – cum – Workshop on 'Modern analytical Technique in Food and Oil Technology' (2001)

iii) Silver Jubilee Foundation day and Seminar – cum – workshop on "Consumer Perception on Quality Assurance in Oil, Food & Aqua Products"(2003)

iv) Detection & Prevention of adulteration in Food Stuffs", Dec. 19th to 21st,2003 at GSRF, New Delhi, Sported By NCSTC, Ministry of Science & Technology(2003),

v) Seminar on "Quality Aspects of Edible Oils and Spices in Human Nutrition" (2004),

vi) Seminar – cum – workshop "Health and Harmony Through Quality Foods" on National Consumer Day (2004),

vii) Seminar – cum – workshop on Nutritional Aspects of Oils & Food, On World Consumer Week (2006).

viii) "National Seminar on Non-Biological Contaminants in Food, Feed and Their Safety Standards" (2008)

10. RESEARCH PROJECTS FOR GOVERNMENT OF INDIA.

1981	Scale Up Trial Of Partial Hydrogenation of Soybean Oil and Production of Low Cost Human Nutrients from Soybean Meal and Other Edible Flours.	Technology Mission on Oilseeds, Government of India
1982	Blending of Edible Oils	Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Civil Supplies, Consumer Affairs and Public Distribution
1991	Recovery of Oil from Spent Bleaching Earth.	Ministry of Civil Supplies, Consumer Affairs and Public Distribution, GOI.
1992	Shelf Life of RBD Palmolein. Result Utilised in Preparation of Standard on Palmolein Oil.	Ministry of Civil Supplies, Consumer Affairs and Public Distribution, GOI.

1994	Industrially Active Lipases for Making Value Added Fat Products.	Ministry of Civil Supplies, Consumer Affairs and Public Distribution, GOI.
1995	Study on the Use of Mustard Oil in Vanaspati and Upscaling Inter-esterification Process for Determination of Design Data and Cost for Preparation of Vegetable Ghee, Shortening and Margarine Base.	Directorate of Vanaspati, Vegetable Oils and Fats, GOI.
1996	Preparation of Nutritious Low-Trans Shortening and Margarine Fat Bases with Economic & Nutritional Advantages	Directorate of Vanaspati, Vegetable Oils and Fats, GOI.
1999	Study on Appropriate Enrichment of Vegetable Oils with Micronutrients, Particularly by Admixing with Natural Oils	Directorate of Vanaspati, Vegetable Oils and Fats, GOI.
2001	Development of Micronutrient Enriched High Performance Multiple Blended Oil Medium.	Directorate of Vanaspati, Vegetable Oils and Fats, GOI.
2002	Development of High Performance Oil Blended of GNO, RBO, SBO & Palm Oils.	Technology Mission on Oilseeds, Pulses & Maize, Council Of Scientific & Industrial Research, GOI
2002	Recovery, Upgrading, and Modification of Lecithin form Rice Bran Oil.	Ministry Of Consumer Affairs, Food And Public Distribution, GOI.
2003	Development of Soybean, Ricebran Based Neutraceuticals.	Ministry of Food Processing Industries. GOI.
2004	Stability of Beta Carotene in Imported Palm Oil. The Result Was Utilised to Lay Import Specifications	Directorate of Vanaspati, Vegetable Oils And Fats, GOI.
2004	Development of Medium Chain Triglycerides.	Technology Mission on Oilseeds, Pulses & Maize, Council of Scientific & Industrial Research,

		GOI.
2008	Detoxification And Utilization of Key Agro-Forest Based Non Conventional Oil Cakes in the Feeding of Livestock.	Multi-Institutional Project Sponsored By Department Of Bio-Technology, GOI.

11. RESEARCH AND DEVELOPMENT PROJECTS AND DRAFT STANDARDS FOR BIS AND CCFS.

11.1. Study on colour developments in Baudoin test used for detection of adulteration of sesame oil/vanaspati.

11.2. Development of analytical methods for detection of adulteration e.g. detection of oils present in admixture, detection of linseed oil in Soyabean oil.

11.3. Testing repeatability and reproducibility of draft method for detection of Taramira in other oils.

11.4. Testing repeatability and reproducibility of draft method for detection of Argemone oil in other oils.

11.5. Testing repeatability and reproducibility of draft method for detection of linseed oil in other oils.

11.6. Testing repeatability and reproducibility of draft method for detection of Karanja oil in other oils.

11.7. Testing repeatability and reproducibility of draft method for detection of Ambadi seed oil in other oils.

11.8. Study on Cloud point of palmolein.

11.9. Draft Standards for “Sensory Evaluation Of Edible Fats and Oils”.

11.10. Draft Standards for “Criteria Of Edibility Of Fats and Oils”.

11.11. Draft Standards for “Detection Of Rice bran Oil In Other Oils”.

11.12. Draft Standards for “Method Of Baudoin Test”.

11.13. Development of a method for estimation of Oryzanol content in rice bran oil.

11.14. Review of specifications issued by Bureau Of Indian Standards: Oils and Oilseeds Sectional Committee, FAD 13, Bureau of Indian Standards constituted a panel and subcommittees

for reviewing the present specifications issued by Bureau of Indian Standards on oils and oil based products keeping in view the provision of PFA rules, any other National/ International standards (particularly Codex specifications) and proposing any revision/amendment. Dr. Adhikari (Director, Labs) is a member of FAD 13 and the above-mentioned panel as well as Convener of the subcommittee constituted for reviewing the Methods of Testing Oil and Fats.

11.15. Preparation of draft standards for the Oils and Fats Subcommittee of the Central Committee for Food Standards, Government of India on: "Draft Specification on Partially Hydrogenated Soybean Oil and Partially Hydrogenated Winterized Soybean Oil",

12. Status Reports on Oil and Food Technology for GOI

12.1. Status report on "Blending of Oils to Produce Nutritionally Superior Edible Oil Mediums", for the Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Food and Consumer Affairs, Government of India.

12.2. Status report on "Analytical Characteristics and Stability of Refined Palm Oil Samples", for the Directorate of Vanaspati, Vegetable Oils and Fats, Ministry of Food and Consumer Affairs, Government of India.

12.3. Status report on "Medium Chain Triglycerides for Technology Mission on Oilseeds, Pulses and Maize", Council of Scientific and Industrial Research, Government of India.

12.4. Status report on "Detection of Genetically Modified Oils", for the Directorate of Vanaspati, Vegetable, Oils and Fats, Ministry of Food and Consumer Affairs, Government of India.

12.5. Status report on "Repeated Frying of Vegetable Oils" for the Ministry of Food and Civil Supplies, Government of India.

12.6. Status report on "Shelf Life of Food Products Based on Soybean".

12.7. Status report on “Hydrogenation of Mustard Oil”.

13. Analysis and Testing for HVOC (GOI Undertaking)

13.1. Quality Control Programme of vanaspati, raw oil, and processing materials.

13.2. Analysis of palmolein and rapeseed oil samples.

13.3. Analysis of Ready To Eat Food samples.

In fact, Ganesh Scientific Research Foundation acted as the analytical arm of HVOC Ltd. right from its inception i.e., from 1978.

14. Miscellaneous Research and Analysis Work

14.1. Development of Soybean flour as a protein rich, nutritious and economic item which may be utilized as supplement/substitute of wheat flour/besan.

14.2. Study on nature and amount of glucosinolates in seeds of Indian Brassia and Eruca Sativa.

14.3. Evaluation of frying performance of common Indian oil and fats.

14.4. Development of different kinds of ready to eat Soya snacks.

14.5. Use of antifoaming agent for reduction of foaming problem of Rice Bran Oil.

14.6. Determination of Carotene content in crude palm oil sample stored at different temperature conditions. Results were utilised to change the limits of minimum carotene content (250 ppm from 450 ppm) in imported crude palm oil.

14.7. Performance evaluation of hot air rice bran stabilizer.

14.8. Study on melting characteristic of hydrogenated palm, shortening and other oils.

14.9. Analysis of Rice bran samples for Modernization of rice mills.

14.10. Analysis of crude palm oil samples for complete carotene profile to ensure conformance with Government Specifications.

15. Collaboration with Ayurvet Research Foundation

On 1st January 2007, the Ganesh Scientific Research Foundation joined hands with Ayurvet Research Foundation (ARF), in order to upgrade its laboratories and to seek national and international recognition as a scientific testing laboratory like Lloyds, SGS etc. The ARF had an investment portfolio of Rs. 300 lakhs and showed willingness to collaborate with the GSRF. The ARF, through a Memorandum of Understanding (signed in March, 2006) agreed to commit above mentioned investment and also volunteered to attract other similar voluntary donors as well as the government departments to contribute project based funds..

16. RESEARCH ACTIVITIES

16.1. Ganesh Scientific Research Foundation has been conducting research in projects assigned by various Government Departments and industrial organizations in the field of oil and oil-based products, animal feed, food and related materials. Research has been conducted on food safety and nutrition, micronutrient enrichment of oils, oil based products and common food items, detection of adulteration and contaminants, utilization of indigenous nontraditional resources to increase the availability of food, oil and animal feed, detoxification of nontraditional oilcakes for utilization as animal feed, micronutrient enrichment and recovery of value-added by-products such as wax, lecithin, vitamin E, oryzanol and fatty acids, from the vegetable oil refining industry, development of interesterified fat based Vanaspati, margarine etc. All research investigations were conducted according to the work plans approved by concerned authorities. Some of the research activities undertaken in the present year are discussed.

16.2. "**Detoxification and Utilization of Agro-forest based unconventional oilcakes in the feeding of livestock" financed and supported by the Department of Biotechnology, Government of India**.

16.2.1. ***Genesis of the project:*** National agriculture policy has stressed strongly upon the development of animal husbandry and dairying, assigning high priority in the efforts for diversifying agriculture, increasing protein availability in food basket and for generating exportable surpluses, thereby generating wealth and employment in the agriculture sector. To achieve this objective and to optimize the output of livestock products, one significant strategy comprises of expanding current animal feed base and improving nutrient extraction from the available biomass . Proteins are one of the major costly items in the livestock diets and usually deficient to the tune of 50% of the requirements in the roughage based feeding systems. Poor dietary supply of proteins results in low rates of production and reproduction as well as increased susceptibility of livestock to diseases. For improving production, efficiency of utilization of the available conventional and non-conventional protein rich feed resources needs to be maximized.

16.2.2. Despite being rich in nutritive value, some of the known and emerging unconventional feeds like neem seed kernel cake, karanj cake and jatropha meal are hitherto being wasted due to presence of one or the other toxic factors and are not being used effectively as a component of animal feed. Available processing (chemical, physical, biological) techniques of these non-conventional feeds may reduce or ameliorate harmful factors partially or completely to render them as a valuable wholesome protein supplements; however, these techniques need to be refined, reevaluated and developed for market viability. In this context, Dept of Biotechnology, Government of India convened a Brain Storming Meeting on 25th May 2006 inviting experts in the field of animal nutrition to identify important areas of research and chalk out

future research strategies for improving bio-availability of proteins from potential protein sources. The present project proposal on **Detoxification and utilization of key agro-forest based non-conventional oilcakes in the feeding of livestock** was submitted to Department of Biotechnology in tune with the recommendations of Brain Storming Meeting held at DBT. It was decided that a multi-centric project on detoxification of oil cakes will be formulated by Dr. K. Sharma, IVRI along with Ayurvet as an Industrial Partner and Ganesh Scientific Research Foundation was identified as one of the participants of above multi-institutional project.

16.2.3. ***Objectives of the project:*** The project was aimed to facilitate large scale availability and utilization of non-conventional protein rich agro-forest based oil cakes in the diet of livestock for enhancing their productivity with following specific objectives:

- To assess the respective efficiency of detoxification methods available for karanja, jatropha and neem cakes and their feasibility for commercialization.
- To evolve economic rations by effective use of detoxified oil cakes for meat and milk production.

16.3. Progress of the Project

16.3.1. Comprehensive survey report- In the first phase, a comprehensive survey report was prepared by GSRF on various aspects on the three selected cakes viz., chemical composition, nature and level of toxic principles, available detoxification methods and respective efficiencies etc.

16.3.2. Collection of Neem, Karanja, And Jatropha Seed Samples From Different Agroclimatic Zones Of India. A list of Neem, Karanja, and Jatropha seed manufacturers/suppliers was prepared based on information collected from internet and other sources. Around 100 manufacturers were contacted for the purpose and samples were

collected. So far, we have ten Jatropha, eleven Neem and three Karanja samples. Around 2 kgs of each sample were sent to Ayurvet, for authentication, alongwith botanical descriptors. Required amounts of jatropha,neem and karanja seeds were cleaned, cracked manually without damaging the seeds and the kernels stored in plastic containers at room temperature prior to further analysis.

16.3.3. Physical Properties of Seeds (Jatopha, Neem, Karanja): For measurement of Physical properties of seeds, twenty seeds were randomly taken from each sample. The average weights, length, width of the seeds were determined. The seeds were cracked manually without damaging the seeds, the shells were carefully removed and average weight of the kernel were determined .The average shell weight was obtained by subtracting the wt of kernel from the wt of the respective seeds.

16.3.4. Oil Extraction for Preparation of Oilcake Samples: Required amounts of seeds were dehulled, kernels were ground using a mechanical grinder, and defatted in a Soxhlet apparatus using petroleum ether (b.pt 40-60 deg c) for 16 hrs. The defatted kernel meal was air dried at room temperature and stored in plastic containers.

- Analysis of chemical, biochemical components and anti-nutritional factors in various cakes were carried out in accordance with the standard tests and procedures as prescribed by the Bureau of Indian Standards, Association of Official Analytical Chemists International, American Oil Chemist's Society, and Standard methods given in the literature. Crude protein
- Ether extract
- Crude fiber
- Ash
- Neutral Detergent fiber
- Minerals, phosphorus,
- Amino acid profile etc.

16.3.5. Standardization of Analytical Procedures for Estimation of Toxic Factors Standardization of Analytical procedures for estimation of the following toxic factors of Jatropha , Neem , Karanj cake samples was conducted following standard literature methods:

- Jatropha- Trypsin Inhibitor Activity, Saponin, Phorbol ester, Phytate, Tannin content
- Neem –Azadirachtin,
- Karanj-Karanjin, Tannin (% of protein), Trypsin Inhibitor Activity

Laboratory Scale Detoxification Experiments: Detoxification experiments were conducted with Jatropha, Neem, Karanja cake samples following the methods mentioned in project proposal e.g., treatment with Sodium chloride soln, treatment with Lime [Ca $(OH)_2$] soln, water washing (overnight soaking followed by decantation, Urea (fertilizer grade) ammoniation, alcohol treatment etc. Detoxified cake samples were analysed for chemical parameters & toxic components. Laboratory scale detoxification experiments: were conducted with Jatropha, Neem, Karanj cake samples following the methods mentioned in project proposal e.g., treatment with sodium chloride solution, treatment with lime [Ca $(OH)_2$] solution, water washing (overnight soaking followed by decantation, urea (fertilizer grade) ammoniation, alcohol treatment etc. Detoxified cake samples were analysed for chemical parameters and toxic components. Alcohol extraction method was found to be the best effective method which removed 85-90% of total toxins. Recovery of anti-nutrients like karanjin from alcohol washings has been optimised.

Purchase of a solvent extraction plant (Capacity: 500 Liter) for large scale detoxification of cakes was placed completed from M/S.SSP Pvt. Limited Faridabad and the plant was installed soon at Baddi unit of Ayurvet Ltd.

The project was completed successfully and report duly submitted.

16.3.6. Benefits of the project: The project was proposed to be executed in mission mode, and will provide the base for:

- Large-scale use of hitherto underutilized key non-conventional oil cakes after detoxification can substantially improve the protein availability and consequently cost effective livestock production.
- Expansion of the existing feed base by value addition to non-traditional oil cakes for livestock.
- An estimated benefit of Rs. 225 Crore annually to the feed industry.
- Creating job opportunities for women and weaker sections of society.
- Other beneficiaries of the project will be farmers and livestock keepers, research community in livestock nutrition and feed technology, feed compounding industry and oil industries producing non-traditional oils and cakes.

17. PRODUCTION OF BIO-DIESEL FROM NON-TRADITIONAL OIL /OTHER LOWCOST OILS BY COST EFFECTIVE AND ENVIRONMENT FRIENDLY METHOD(IN HOUSE RESEARCH)

17.1. Vegetable oils are main starting materials for producing bio-diesel by interesterification reaction using base catalyst (sodium methoxide, sodium hydroxide etc.) and methanol**.** However, in India, edible oils should better be preserved for edible purposes and cheaper starting materials should be exploited for production of biodiesel to reduce production cost.

17.2. Such sources of cheaper starting material are low cost nontraditional oils having high free fatty acids, acid oil, (hydrolyzed product of soap-stock generated during vegetable oil refining process), and oil recovered from spent bleaching earth. There is great potential to create a value added bio-diesel product from such inexpensive material. Objective of the project was to develop technical know-how for production of bio-diesel from oil.

17.3. Work done in Laboratory Scale included detailed analysis, preparation of alcohol ester from low cost nontraditional oils by acid

catalyzed alcoholysis, optimisation of reaction conditions and oil – Alcohol /acid /(Sulfuric) ratios. Procedure for separation of resultant fatty acid methyl ester (biodiesel) and glycerin, alcohol removal, and washing of the product was standardized. The methods were industrially feasible, efficient and cost effective to achieve a rapid, high efficiency synthesis of biodiesel from high FFA oils.

17.4. Adoption of the resultant technology would provide excellent value addition for nontraditional oils, and an increased supply of economically affordable biodiesel to consumers.

18. Analytical Work

18.1. GSRF received analytical assignments regularly from leading edible oil and food industries of India. Analytical work conducted by GSRF included full analysis of edible oil samples (according to PFA/BIS/Agmark specifications); analysis of fatty acid composition, vitamin components, micronutrients, presence of contaminants etc using GLC/HPLC/UV Visible spectrophotometer. The specific analytical assignments included estimation of mono-di-glycerides, bleachability, phosphorus, nickel content, adulteration tests, flash/smoke points etc., physical, chemical, microbiological analysis of rice flour, analysis of oilseeds, animal feed samples. The Industries which sent their samples for analysis of oil, food and animal feed included Dhara Vegetable Oil and Foods Company Ltd., HAFED Oil Mills, NAFED, Recon Oil Industries, New Delhi, Chemical Construction International Pvt Ltd, New Delhi, Raj Agro Mills, New Delhi, Sethia Oil Mills Burdwan and Sahapur units, A. P. Solvex Ltd., Dhuri, Punjab, ITC Agro Tech Foods Jaipur, and Secunderabad, Jhunjhunwala Oil Mills, Varanasi, JVL Agro Foods, Alwar and others, Rites Ltd. Particular mention may be made of

- Detailed analysis of packaged foods according to notification GSR 491(E) dated 21st July, 2006, Ministry of Health and Family Welfare, Govt. of India (implemented from 20.2.08) to amend the

labeling requirement (Prevention of Food Adulteration Rules, 1955) including the amount and type of fatty acids (including amount saturated fatty acid, mono and polyunsaturated fatty acids, and Trans fatty acids) , cholesterol in gm/per 100 gm or per 100ml,Numerical information on vitamins and minerals, USE-BY date /recommended last consumption date/expiry date, protein, carbohydrate, fat, energy.

- Assignments for analyzing oil and food samples according to this amendment were received from Dhara Vegetable Oil and Foods Company Ltd, Haryana State Cooperative Supply and Marketing Federation Adani Wilmar Private Ltd ,Centre for Technology and Development and others.
- Detailed analysis of biodiesel samples and raw materials (fish oil, fatty acid distillates etc) according to ASTM specifications.
- Samples were received from Pegasus Technologies, Chemical Construction of India, Southern Online Biotechnologies, Nova Biofuels etc.

18.2. Total value of analytical work received during 2013-14 is Rs.11,29,699 as compared to Rs 9,94,782 during the previous year.

19. New project proposals:

19.1. Following project proposals have been submitted to Directorate of Vanaspati, Vegetable Oils and Fats,Ministry of Food and Consumer Affairs,GOI.

1. RECOVERY OF PHYTOSTEROLS FROM DEODORIZER DISTILLATE OF SOYBEAN & OTHER OILS / BIODIESEL RESIDUES
2. DEVELOPMENT OF SIMPLE, VERSATILE, COST-EFFECTIVE AND RELIABLE HPTLC-BASED METHODS FOR DETECTION OF ADULTERATION IN EDIBLE OILS, FATS & VANASPATI
3. DEVELOPMENT OF SIMPLE, VERSATILE, COST-EFFECTIVE AND RELIABLE HPTLC-BASED METHODS FOR DETECTION OF ADULTERATION IN EDIBLE OILS, FATS & VANASPATI

19.2. Following projects will be conducted jointly with IIT, DELHI. Project proposals have been prepared -

- Study on nutrient loss/retention under various solar conditions of solar cabinet dryer for a variety of produces like fruit bar, vegetable products, green leafy vegetables, spices and condiments etc.- Department of Science and Technology, Govt of India.
- Development of value added Flaxseed oil based fat products - Ministry of Food Processing Industries

GSRF will submit projects also to the following Government Departments.

- Directorate of Vanaspati,Vegtable Oils and Fats,
- Science and Engineering Research Council (SERC)
- Department of Non Conventional Energy Sources (DNES).
- Ministry of Food and Consumer Affairs
- Food Safety and Standardisation Authority of India.

19.3. Training:

- Dr. Mridula Tyagi, Sr. Manager, (R&D) Greentec Private Ltd., - training on preparation of Biodiesel
- Ms. Asheema from Adani Wilmar Private Ltd – Analysis of Mono-and Di glycerides.

19.4. Seminar:

1. Mr. Sarvesh K.Upadhyay and Mr. Rakesh Luthra attended 29th Ahara International Food Fair, 2014, New Delhi.
2. Dr. Adhikari attended "Multistakeholder Round Table cum Training Sustainable Solutions for Jatropha based Biofuels in India – PHD house, New Delhi, 5th Feb. 2014
3. Dr. Adhikari attended workshop on Food Safety. Bureau of India Standards, 12th March, 2014
4. Dr. Adhikari attended Eight Meeting of Oils and Oilseeds Sectional Committee FAD, 13th December, 2013 .

Annexure 1

List of Important Clients

1. Directorate of revenue intelligence, Kolkata
2. The Haryana State Cooperative Supply And Marketing Federation Limited (Hafed), (Rewari, Narnaul)
3. Hafed Cattle feed plant, Rohtak, Saktakhera,
4. Dhara Vegetable Oil And Foods Company Ltd, Delhi, Alwar, Hospet, Palanpur
5. Rites Ltd., Gurgaon
6. NAFED (National Agricultural Cooperative Marketing Federation of India Ltd.)
7. Army Welfare Housing Organisation, Noida
8. Adani Wilmar Ltd
9. Pepsico India Holding
10. Agro Tech Foods Limited, Jotwara, Bhiwadi,
11. Bunge India Private Limited, Rajpura
12. Consumer Education and Research Centre, Ahmedabad
13. The Energy and Resource s Institute(TERI)
14. KAMAL SOLVENT EXTRACTIONS PVT. LTD, Rajnandgaon
15. Centre for Technology and Development
16. JMD OILS PVT. LTD.
17. NIRMAL SEED PVT. LTD, Jalgaon (Maharashtra)
18. Jhunjhunwala Vanaspati, Varanasi
19. Shree Hari Industries, Bharatpur
20. Amrit Banaspati, Rajpura
21. 3 F Industries Ltd., Andhra pradesh
22. Mecpro Heavy Engineering Limited
23. Anil Modi Oil Industries Ltd. Pilibhit
24. Chemical Construction International (P) Ltd.
25. Khandelia Oil Mills, Chandigarh
26. Jugal Kishor Vanaspati ltd., Bikaner
27. Rasoi Group, Kolkata
28. Sayga Investment Corporation Khartoum, Sudan
29. SKM Animal Feeds and Foods (India) Limited., Tamilnadu
30. Recon Oil Industries Pvt. Ltd
31. Puri Oil Mills
32. Nova Bio-fuels Pvt. Ltd
33. Raj Oil Mills
34. Abhinav Biscuits, Kolkata
35. Tara Health Foods,
36. Ajanta Soya Limited
37. Southern Online Biotechnologies
38. A.P. Organics, Pvt. Ltd.
39. JVL Agro Foods, Alwar
40. Jindal Oil Mills
41. Sethia Oils Ltd, Burdwan, Barabanki
42. Ayurvet Animal Feed Plant, Gohana
43. Ayurvet Ltd., Laxmi Nagar

44. Bhiwani Vanaspati,
45. Adebar Trades & Industries Ltd, Nigeria
46. Aztec Feeds
47. Delhi Kanodia Oil Mills
48. Hariyali Kissan Bazar
49. J.R. Agro Industries, Barabanki
50. G.L.Foods, Pilibhit
51. Ruchi SOYA Industries Ltd, Haldia, Chennai
52. Suraj Shree Chemical Ltd.
53. SYN Water Technologies Pvt. Ltd
54. Ilab Info Technology center Pvt. Ltd.
55. Kwality Dairy (I) Ltd., Delhi, Ballabhgarh
56. Indian Geotechnical Services
57. Dairy Craft (India) Pvt. Ltd.
58. Dashmesh Promoters and Developers Pvt. Ltd.
59. Bagla and Co.
60. Bharat Industries,
61. Colonel's Kababs
62. COLORAYS
63. Hemant Homeo and ayurvet
64. Ilab Info Technology center Pvt. Ltd.
65. Jaina Associate Industries Lubricates and Chemical, Chandigarh
66. Kissan Petro Oil (P) Ltd.
67. Kumar Oil Mills.
68. MCA Industries
69. Nova Bio-fuels Pvt. Ltd.
70. OM PRAKASH
71. Pawagarh Mall
72. Pegasus Technologies
73. Prithvi Sound Products Co. Pvt. Ltd.
74. S.K.Cosmetics
75. Secant Infrastructure Pvt. Ltd.
76. Oil Mills Shakti
77. Shiv and Sons
78. Shivam Oil Mills
79. Shree Sita Refiners Pvt. Ltd.
80. Shubham Fun Food Products
81. Tapasya Group
82. Tara Feed Ltd,
83. The Energy and Resource s Institute(TERI)
84. United OIL Mills
85. Verma Oil Mills
86. Vikas Oil Mills
87. Yogum Developers (P) Ltd.
88. Chemtreat Industries,
89. Global Capacitors
90. Gulab Oil Mills
91. Hari Phool Oil Expeller
92. Hariyali Kissan Bazar
93. Jivo Willness

94. Kissan Petro Oil (P) Ltd.
95. Kwality Dairy (I) Ltd.
96. Pegasus Technologies
97. Raj Oil Mills
98. Rahore & Sons
99. Sahni Oil Mills
100. Paam Eatables Ltd.
101. Rejuve Organics Pvt Ltd.
102. Nirmal seeds Pvt Ltd
103. Sterling Agro Industries Ltd

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Annexure 2

MILESTONES

PAST CHAIRPERSONS OF GSRF

PERIOD	NAME & DESIGNATION
1978 - 1980	DR. N. C. B. NATH Director, Foundation to Aid Industrial Recovery, Chairman & Managing Director, Ganesh Flour Mills.
1980	SHRI I. M. SAHAI, I.A.S. Joint Secretary, Ministry of Civil Supplies, Government of India.
1981	SHRI S. K. AGARWAL Chief Director, Ganesh Flour Mills.
1981	SHRI A. R. BANDYOPADHYAY Joint Secretary, Ministry of Civil Supplies, Government of India
1981 - 1985	SHRI N. M. SHETTY Chairman & Managing Director, Hindustan Vegetable Oils Corporation Ltd
1985	SHRI RAGHUVANSH KUMAR MATHUR Managing Director, Hindustan Vegetable Oils Corporation Ltd.
1985 - 1990	SHRI S. C. KAPUR Chairman & Managing Director, Hindustan Vegetable Oils Corporation Ltd
1991	SHRI A. K. GOSWAMI, I.A.S. Member, BIFR, Government of India
1991 - 1992	SHRI M. K. ZUTSHI, I.R.S. Joint Secretary, Ministry of Food, CA & PD, Government of India
1993 - 1997	SHRI S. C. KAPUR Chairman & Managing Director, Hindustan Vegetable Oils Corporation Ltd
1997	SHRI R.K.MATHUR Additional Secretary & Economic Advisor, Ministry of Food & Civil Supplies, Government of India

1997	SHRI K. M. SAHNI, I.A.S. Joint Secretary, Ministry of Food, CA & PD, Government of India
1998 - 1999	SHRI R.N.DAS, I.A.S. Joint Secretary, Ministry of Food, CA & PD, Government of India
2000	SHRIMATI KANTI DEB, I.A.S. Joint Secretary, Ministry of Food, CA & PD, Government of India
2000	SHRI B. K. BAL, I.A.S. Joint Secretary, Ministry of Food, CA & PD, Government of India
2001	SHRIMATI RAJNI RAZDAN, I.A.S. Joint Secretary, Ministry of Food, CA & PD, Government of India
2002 - 2004	PROF. M. M. CHAKRABARTY Vice-Chancellor, Jadavpur University, Kolkata
2004 - 2006	MR. A. K.GOSWAMI, I.A.S. Member, BIFR, Government of India

TABLE 1: ORGANIZATIONAL DEVELOPMENT

1978	GSRF set up as a public charitable irrevocable Trust by the Board of Directors of Ganesh Flour Mills Co. Ltd, recognized as public charitable Trust
1980	Recognized as Scientific & Industrial Research Organization by the Ministry of Science & Technology.
1999	Recognized as Competent Laboratory by Edible Oil Commissioner, Ministry of Food and Consumer Affairs, GOI.
1999	Recognized as Competent Laboratory by Government of National Capital Territory of Delhi.
2006	Collaboration with Ayurvet Research Foundation

TABLE 2: AWARDS

1984	Invited by Government of India, Ministry of Health, on the Oils and Fats Subcommittee of the Central Committee for Food Standards, to prepare draft specifications on partially hydrogenated soybean oil and partially hydrogenated winterized soybean oil.
1985	Invited Member on Oils and Oilseeds Sectional Committee, Bureau of Indian Standards
1989	Dayabhai Vadalia Memorial Award Journal of Oil Technologists' Association of India, for best paper of the year

TABLE 3: SEMINARS CONDUCTED BY GSRF

1985	Organisation of Workshop on 'Modern Trends in Oil and Allied Industries' in collaboration with Modi Group of Industries.
1999	Helped Govt of India in detection of Argemone oil in edible oils during the outbreak of dropsy epidemic.
2001	Organisation of Seminar – cum – Workshop on ' Modern analytical Technique in Food and Oil Technology'
2003	Organisation of Seminar Detection & Prevention of adulteration in Food Stuffs", and Consumer Perception on Quality Assurance in Oil, Food & Aqua Products
2004	Organisation of Seminar on "Quality Aspects of Edible Oils and Spices in Human Nutrition" and Seminar – cum – workshop on "Health and Harmony Through Quality Foods"
2006	Organisation of Seminar – cum – workshop on Nutritional Aspects of Oils & Food.

TABLE 4: LIST OF SELECT VISITING DIGNITARIES

YEAR	Name & Status
2003	Shri Bachi Singh Rawat Minister of State For Science & Technology, GOI.
2003	Shri Subash Meharia Minister of State for Food, Consumer Affairs, & Public Distribution, GOI.
2003	Shri Shankar Prasad Jaiswal Member of Parliament (Lok Sabha)
2004	Shri R.K. Mathur Director General, Audit And Accounts, GOI.
2004	Shri S.K. Tuteja, I.A.S. Secretary, Ministry of Food, Consumer Affairs, & Public Distribution, GOI.
2001	Smt. Rajni Razdan, I.A.S. Joint Secretary, Ministry of Food, Consumer Affairs, & Public Distribution, GOI.
2003	Shri A.K. Goswami, I.A.S Chief Secretary; Member, B.I.F.R. Himachal Pradesh.
2004	Dr. Sandeep Khanna, I.A.S. Additional Secretary, Ministry of Social Justice, GOI.
2004	Shri Karnail Singh, I.A.S. Joint Secretary, Ministry of Food, Consumer Affairs, & Public Distribution, GOI.
2004	Dr. Anuj Sinha Scientist G &

	Head, Science & Technology Communication and Science & Society Division, Department Of Science & Technology , GOI
1995	Prof. S. Varadharajan Director General, Council Of Scientific And Industrial Research, New Delhi.
1984-1990	Dr. P.R. Krishnaswamy Head, Department Of Nutrition & Dietetics Jaslok Hospital, Mumbai.
1981-1990	Dr. S. Ramachandran Director, National Mineral Development Board
1984-1990	Prof. Sunit Mukherjee Head, Dept. Of Food Technology, Jadavpur University
1988	Prof D K Bhattacharyya Emeritus Professor, University Of Calcutta
1982	Shri Rameshwar Thakur His Excellency, The Governor Of Karnataka
1982	Shri Atma Ram Chairman, National Committee On Science And Technology Principal Advisor To Prime Minister Of India.

TABLE 5: CORE SCIENTIFIC STAFF OF GSRF

Sl NO	**Name of Employees**	**Qualification**	**Post**
1	Dr. Mrs. J.Adhikari	M.Sc ,Organic Chemistry, PhD (Organic Chemistry)	Director General
2	Mr. S.P.Singh	B.Sc. and AIC	Scientist
3.	Mr Rakesh Luthra	M.Sc	Scientist
4.	Mr Sarvesh Upadhyay	M.Sc	Scientist