

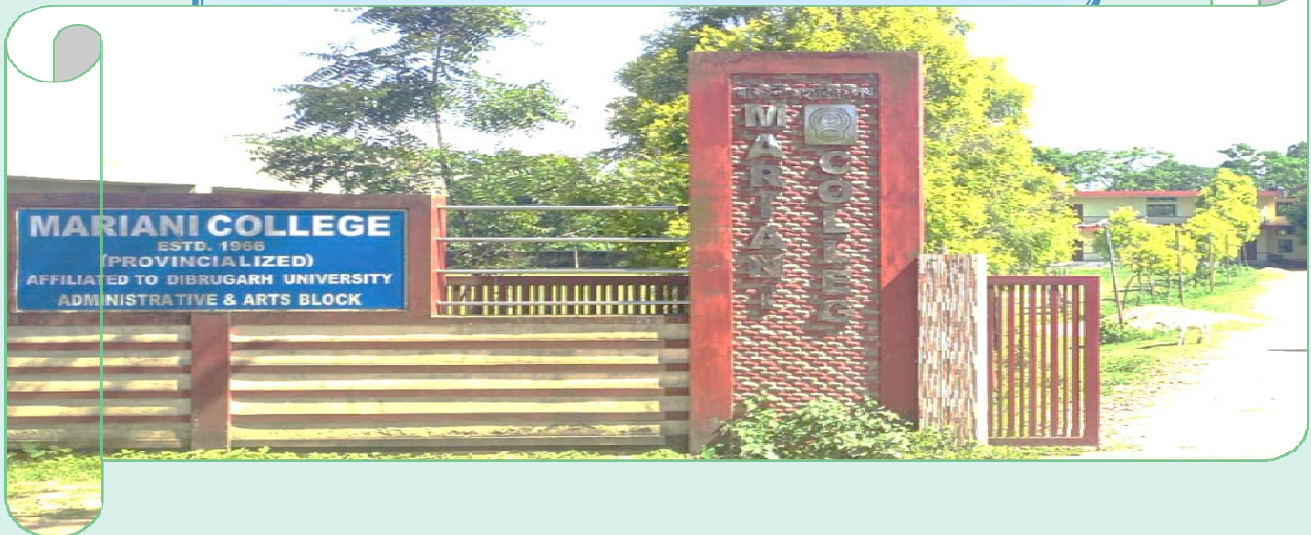


# MARIANI COLLEGE

**SELF STUDY REPORT  
FOR 3RD CYCLE OF NAAC ACCREDITATION  
2018 -2023**



## **Supporting Documents for NAAC Self Study Report (SSR) (3rd Cycle) Period: 2018-2023**



<b>Criterion 3</b>	<b>Key Indicator: 3.3</b>
<b>Research, Innovations and Extension</b>	<b>Research Publication and awards</b>
<b>Metric Number: 3.3.1</b>	<b>Number of Papers published per teacher in the journals notified on UGC website during last five years.</b>

**Prepared and submitted by:  
Mariani College**

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## SELF STUDY REPORT

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2018 - 2023



Matric No.	Heading
3.3.1	Papers published per teacher in the Journals notified on UGC website during the last five years
<p>Report Prepared and Submitted by IQAC</p>	

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 <p>The screenshot shows a research article from the Journal of Optics. The title is "Multiple filamentation and control of properties of self-guided elliptical Gaussian laser beam". The authors are Dipankar Ghosh and Anupam Das. The article is from Volume 48, Issues 4-5, 2019. The abstract discusses the spatial evolution of an elliptical Gaussian beam in fluoride glass (Kerr medium) and the effect of input beam ellipticity on multiple filamentation. A reference is listed: V.I. Bespalov, V.I. Talanov, Filamentary structure of light beams in nonlinear media. Tranz. JETP Lett. 3, 307-310 (1966).</p>	
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<p><b>Combined Effect of Hall and Ion-slip Currents on Unsteady MHD Couette Flow in a Channel with Porous Walls</b></p> <p><i>Dr. Muhim Chutia*</i></p> <p><b>Abstract</b></p> <p>The unsteady magnetohydrodynamic (MHD) Couette flow of a viscous incompressible electrically-conducting fluid between two parallel porous plates is studied taking hall and ion-slip currents into consideration. An external uniform magnetic field and uniform suction and injection are applied perpendicular to the plates while the fluid motion is subjected to the impulsive movement of the lower plate. A numerical solution of the governing equations describing the flow is obtained by the explicit finite difference method. Approximate numerical solutions for the primary and secondary velocity are computed for the cases: (i) when the magnetic lines of force are fixed relative to the fluid; and (ii) the magnetic lines of force are fixed relative to the moving plate. The effects of the various governing parameters e.g. the magnetic parameter (<math>M</math>), Hall parameter (<math>\beta_H</math>), ion-slip parameter (<math>\beta_I</math>), suction/injection parameter (<math>S</math>) on velocity field are illustrated graphically and discussed.</p> <p><b>Key words;</b> MHD, Couette flow, uniform suction and injection, Hall and ion-slip currents, numerical solution.</p> <p><b>1.0 Introduction</b></p> <p>The study of magnetohydrodynamic (MHD) Couette flow has been a topic of great interest for many researchers due to its applications in MHD power generators and pumps, accelerators, aerodynamic heating, electrostatic precipitation, polymer technology, petroleum industry, purification of crude oil and fluid droplets and sprays. Katagiri (1962) studied the formation of Couette flow of a</p> <p><small>* Dr. Muhim Chutia, Assistant Professor, Department of Mathematics, Mariani College, Mariani, Assam, Email: muhimchutia@gmail.com</small></p> <p>19</p>	

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*Journal of Food Composition and Analysis* 131 (2021) 105926

Contents lists available at [ScienceDirect](http://www.elsevier.com/locate/jfca)

**Journal of Food Composition and Analysis**

Journal homepage: [www.elsevier.com/locate/jfca](http://www.elsevier.com/locate/jfca)

Original Research Article

**Comprehensive nutritional evaluation of popular rice varieties of Assam, Northeast India**

T. Longvah<sup>a,\*</sup>, K. Maingthya<sup>b</sup>, K. Subhash<sup>c</sup>, Surejit Sen<sup>b</sup>, Sumayana Rathi<sup>b</sup>

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**ARTICLE INFO**

**Keywords:**  
 High yielding rice varieties  
 Iron and calcium variability  
 Degree of milling  
 Nutrition loss

**ABSTRACT**

High yielding varieties (HYVs) of rice have benefited farmers and the public by increasing yields and reducing the risk to consumers. Yet, the nutritive value of HYVs remains grossly under-investigated. In this work, efforts have been specifically focused on nutrient profiling of 20 popular HYVs from Assam as brown rice and milled coarse parts. The study has revealed several varieties that are a reasonably good source of dietary protein, iron, zinc, or calcium. Substantial nutrient variability was observed in the 20 HYVs brown rice with the largest variation observed in protein (19.9%), followed by available iron (2.08%), iron (2.19%), protein (0.66%), and fat (0.86%). At 5% milling substantial reduction of all nutrients occurred (0.02–0.88%) which was further exacerbated at 10% milling. Compared to 10% milled rice, brown rice has a far better nutrient profile and even milling at 5% milling can significantly increase the nutrient content. A change in consumption pattern from white rice to brown rice or even 5% milled rice will be nutritionally beneficial. The rice and rice bran can also help in improving nutrient intake through the use of traditional cuisines and in conventional plant breeding to develop superior nutrient varieties.

**1. Introduction**

Rice (*Oryza sativa* L.) is the principal staple food crop in Assam, where it plays a fundamental role in the state's food security and socio-economic development. As the climate and physiographic features are favorable for rice cultivation, the state's indigenous rice germplasm is endowed with broad wide genetic diversity. However, indigenous rice varieties provide a much lower yield than high yielding varieties (HYVs) developed during the green revolution that also has shorter growth duration and multiple resistance to diseases and insects (Goswami and Bharti, 2012). Faced with the need to increase production to meet the demand of the burgeoning population, the government heavily promoted HYVs, and most farmers replaced their traditional rice varieties with HYVs. In terms of production, Assam ranks 8th among the top rice-producing states in India.

Rice research post green revolution period, continued to focus on improving production. Many factors, including, climate, geochemistry, agricultural practices, post-harvest practices, and genetic makeup of the cultivars, affect the nutrient composition of rice. Data suggest that rice varieties' nutrient composition differences can be substantial, with some cultivars being far superior to others (Kennedy and Hollingsworth, 2003). Given the importance of rice composition, the Commission on Health Research for Food and Agriculture recommended that the nutrient content be among the critical criteria used for rice varieties' selection to improve food and nutrient security. However, in a production-driven environment, variety specific nutrient data generation remains mostly ignored, especially so, with the rice varieties grown in Assam.

Milling is a critical step in the post-production of rice that finally removes the hull to produce brown rice. Further milling/polishing removes the bran layers, including the germ, to yield broken rice and milled head rice. Milling losses consist of bran and broken rice can be as high as 40%. Nutrients are more densely distributed in the bran than the endosperm, which is removed as by-products of milling, resulting in milled white rice's diminished nutrient content. The degree of milling (DoM) can control nutrient losses to a large extent as the nutritional value, and head rice recovery reduces concurrently with a higher DoM. Further, a good deal of scientific evidence points to the potential health benefits of replacing white rice with brown rice (Sun et al., 2010; Aune et al., 2015). There is a renewed consumer interest in brown rice and partially milled rice because of increasing health consciousness in

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<p data-bbox="386 625 1141 646">Exp Brain Res. 2022; Jan;349(1):113-122. doi: 10.1007/s00221-021-06237-y. Epub 2021 Oct 11.</p> <p data-bbox="386 659 1187 789"><b>Garcinol blocks motor behavioural deficits by providing dopaminergic neuroprotection in MPTP mouse model of Parkinson's disease: involvement of anti-inflammatory response</b></p> <p data-bbox="386 802 1117 867">Banashree Chitra Pritam<sup>1,2</sup>, Ankanoni Dutta<sup>1,2,3</sup>, Satarupa Deb<sup>1,2</sup>, Rabul Sakia<sup>1,2</sup>, Muhammed Khanujaman Mazumder<sup>4</sup>, Rajib Paul<sup>5</sup>, Pollob Bhattacharya<sup>5</sup>, Rajat Sandhya<sup>6</sup>, Anupom Borah<sup>7</sup></p> <p data-bbox="386 879 570 900">Affiliations: <a href="#">4 expand</a></p> <p data-bbox="386 903 808 924">PMID: 34633467 DOI: 10.1007/s00221-021-06237-y</p> <p data-bbox="386 951 492 972"><b>Abstract</b></p> <p data-bbox="386 987 1192 1407">Although the etiology of Parkinson's disease (PD) is poorly understood, studies in animal models revealed loss of dopamine and the dopaminergic neurons harbouring the neurotransmitter to be the principal cause behind this neuro-motor disorder. Neuroinflammation with glial cell activation is suggested to play a significant role in dopaminergic neurodegeneration. Several biomolecules have been reported to confer dopaminergic neuroprotection in different animal models of PD, owing to their anti-inflammatory potentials. Garcinol is a tri-isoprenylated benzophenone isolated from <i>Garcinia</i> sp. and accumulating evidences suggest that this molecule could provide neuroprotection by modulating oxidative stress and inflammation. However, direct evidence of dopaminergic neuroprotection by garcinol in the pre-clinical model of PD is not yet reported. The present study aims to investigate whether administration of garcinol in the MPTP mouse model of PD may ameliorate the cardinal motor behavioural deficits and prevent the loss of dopaminergic neurons. As expected, garcinol blocked the parkinsonian motor behavioural deficits which include akinesia, satelepsy, and rearing anomalies in the mice model. Most importantly, the degeneration of dopaminergic cell bodies in the substantia nigra region was significantly prevented by garcinol. Furthermore, garcinol reduced the inflammatory marker, glial fibrillary acidic protein, in the substantia nigra region. Since glial hyperactivation mediated inflammation is inevitably associated with the loss of dopaminergic neurons, our study suggests the anti-inflammatory role of garcinol in facilitating dopaminergic neuroprotection in PD mice. Hence, in the light of the present study, it is suggested that garcinol is an effective anti-parkinsonian agent to block motor behavioural deficits and dopaminergic neurodegeneration in PD.</p> <p data-bbox="386 1419 1135 1459"><b>Keywords:</b> Dopaminergic neurons; Garcinol; Inflammation; Motor behaviour; Neuroprotection; Substantia nigra.</p> <p data-bbox="386 1472 1127 1491">© 2021 The Author(s), under exclusive license to Springer-Verlag GmbH Germany, part of Springer Nature.</p>	
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AMA (ISSN: 00845841)

ISSN: 00845841  
Volume 53, Issue 07, July, 2022

### Nutritional, antinutritional and *in vitro* digestibility of sprouted mung beans

Hemant K. Maame<sup>1</sup>, Minakshi Dutta<sup>1</sup>, Ralul Sen<sup>1</sup>, Samindra Baishya<sup>1</sup>, Manashi D. Purkayastha<sup>2</sup>, Akhil R. Baruah<sup>3</sup>, Surojit Sen<sup>4</sup>, Raju Paswan<sup>5</sup>, Sunayana Rath<sup>1\*</sup>

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#### Keywords:

Antinutrients, Digestibility, Minerals, Nutrients, Sprouting.

#### ABSTRACT

Germination increases the bioavailability of nutrients and sprouts are a good source of vitamins and minerals. Seeds of three mung bean varieties (SGC-16, SGC-20 and IPM-02-3) of Assam were sprouted at 24, 48, 72 and 96 h under dark at 25.12°C. Significant increase in moisture content, crude protein, crude fibre and ash contents, while crude fat, starch and carbohydrate content significantly decreased during the sprouting period. Mineral contents (Na, K, P, Ca, Mg, Fe, Zn, and Cu), vitamin C, niacin significantly increased during the sprouting period. Thiamine increased up to 72 h and riboflavin increased up to 48 h and then both showed decreasing trend. Antinutritional factors like phytic acid and tannin significantly decreased while, *in vitro* protein digestibility significantly increased during sprouting periods. The varieties SGC-20 and SGC-16 are nutritionally superior over the variety IPM-02-3 which can be recommended for use in breeding as sprout varieties.

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<div data-bbox="219 636 1323 1606">  <p><b>genes</b> MDPI</p> <p><i>Article</i></p> <h3>A Comparative Cross-Platform Analysis to Identify Potential Biomarker Genes for Evaluation of Teratozoospermia and Azoospermia</h3> <p>Suchismita Das <sup>1</sup>, Palchraj Guha <sup>2</sup>, Monica Nath <sup>1</sup>, Sandipan Das <sup>1</sup>, Sunojit Sen <sup>3</sup>, Jigajit Saha <sup>4</sup>, Marta Kopanska <sup>5</sup>, Sulagna Dutta <sup>6</sup>, Qazi Mohammad Sajid Jamal <sup>7</sup>, Kavindra Kumar Kesari <sup>8</sup>, Pallav Sengupta <sup>9</sup>, Petr Slama <sup>10</sup> and Shubhadeep Raychaudhury <sup>11</sup> *</p> <p><b>Abstract:</b> Male infertility is a global public health concern. Teratozoospermia is a qualitative anomaly of spermatozoan morphology, contributing significantly to male infertility, whereas azoospermia is the complete absence of spermatozoa in the ejaculate. Thus, there is a serious need for unravelling the common origin and/or connection between both of these diseases. In any, this study aims to identify common potential biomarker genes of these two diseases via a <i>in silico</i> approach using a meta-analysis of microarray data. In this study, a differential expression analysis of genes was performed on four publicly available RNA microarray datasets, two each from teratozoospermia (GSE6872 and GSE6987) and azoospermia (GSE147487 and GSE15718). From the analysis, 118 DEGs were found to be common to teratozoospermia and azoospermia, and, interestingly, sperm antheridigenic protein 17 (SPAL17) was found to possess the highest fold change value among all the DEGs (5.471), while coiled-coil domain-containing 9B (CCDC9B) and coiled-coil domain-containing 11 (CCDC11) genes were found to be common among those of analysis. In Network Analyst, Es, Ailes, and GPCR, this observation indicates that SPAL17, CCDC9B, and CCDC11 genes might have significant roles to play as potential biomarkers for teratozoospermia and azoospermia. Thus, our study opens a new window of research in this area and can provide an important theoretical basis for the diagnosis and treatment of both these diseases.</p> <p><b>Keywords:</b> male infertility; teratozoospermia; azoospermia; biomarker genes; SPAL17; CCDC9B; CCDC11</p> <p><b>1. Introduction</b></p> <p>The worldwide decline in human semen quality has placed reproductive genetics at the forefront of scientific research on human reproduction and fertility. Male infertility is a combination of complex reproductive ailments with substantial genetic backgrounds [1]. It is characterized by the failure to achieve successful pregnancy after a year of unprotected</p> </div>	

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 <p>The screenshot shows a research paper from the journal 'Optik', Volume 251, February 2021, pages 168427. The title is 'Spatial evolution leading to multiple filament formation of higher order super Gaussian beam in bulk medium at input power <math>P \gg P_{cr}</math>'. The authors are Abhijeet Das, Chiranjit Hazarika, and Subrata Hazarika. The abstract discusses multiple filamentation in higher order super Gaussian laser beam propagating in chalcogenide glass, investigated by numerically solving nonlinear Schrödinger equation with split step beam propagation method.</p>	
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<p>The screenshot shows the title page of a research article. The title is "In Silico Mining and Characterization of High-Quality SNP/Indels in Some Agro-Economically Important Species Belonging to the Family Euphorbiaceae". The authors listed are Surojit Sen, Sunayana Rathi, Jagajit Sahu, Subhash C. Mandal, Supratim Ray, Petr Slama, and Shubhadeep Roychoudhury. The article is published in the journal "genes" (MDPI). The abstract discusses the genetic makeup of Euphorbiaceae species, identifying and characterizing high-quality single-nucleotide polymorphisms (SNP) and indels. The introduction mentions the family's diversity and medicinal importance.</p>	
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