पोषण प्रवाह

Flow of Nutrition

Department of Food Science and Nutrition

NEWSLETTER
VOLUME 1
2025

Maharshi Dayanand Saraswati University,
Ajmer

Maharshi Dayanand Saraswati University

Maharshi Dayanand Saraswati University Ajmer is a prominent affiliating University in the state of Rajasthan. Established on August 1, 1987, after the bifurcation of the University of Rajasthan, the University was positioned as a University for Colleges.

Apart from being an affiliating university, the University was supposed to support teaching and research in its affiliated colleges. Later, as per the requirement of UGC, teaching departments were created at the campus in March 1990 and teaching was introduced during academic session 1991-92 with some non-conventional and professional postgraduate courses. Subsequently in the year 2000, teaching of conventional postgraduate programs was introduced on the campus, with specializations that were not available in colleges of the city of Ajmer.

About the Department of Food Science and Nutrition

The Department was established in the year 1994 with various UG and PG level courses with a high standard of Academic and infrastructural development and laboratory facilities. The Department offers academic programs, conducts research on various aspects of nutrition and food science, and engages in outreach activities to raise awareness about the importance of balanced nutrition for overall well-being.

It offers various courses such as B.Sc. in Food Science and Nutrition, M.Sc. in Foods and Nutrition and Post Graduate Diploma in Nutrition and Dietetics with a compulsory internship in reputed hospitals. Students are provided with excellent support through easy access to the Department's library, experimental cookery labs, biochemistry and microbiology labs, seminar halls, etc. This development is supported not only through academic coursework but also with a strong emphasis on research, community outreach focused on capacity building for underprivileged populations, as well as seminars, internships/training in hospitals, food industries, and related organizations. Additionally, educational tours, conferences, and workshops contribute to enriching the students' learning experiences.

The faculty members of the Department of Food Science and Nutrition are highly qualified professionals with extensive expertise in various aspects of food science, nutrition, biochemistry, microbiology, public health and dietetics. They are committed to providing quality education, conducting cutting-edge research, and mentoring students to develop practical skills in the field.

Vision

The Department of Food Science and Nutrition aspires to contribute to a better, more sustainable society by bridging the gap between scientific innovation, nutrition, and public health. We envision:

- Breaking the traditional silos of knowledge by fostering cross-disciplinary collaboration, where students not only gain deep insights into food science and nutrition but also develop critical thinking skills to approach life's challenges with a balanced and scientific mindset.
- Imparting a comprehensive understanding of nutrition, food safety, technology, and health, ensuring students are equipped with the knowledge and practical skills to tackle global health and food security challenges.
- Promoting social responsibility and advocacy, sensitizing students to societal issues such as malnutrition, food insecurity, and health disparities, and preparing them to drive change towards a healthier, more inclusive world.
- Emphasizing the importance of sustainable food practices, environmental responsibility, and wellness, enabling students to make ethical decisions in the food industry and contribute to a healthier planet.

Mission

The mission of the Department of Food Science and Nutrition is to cultivate visionary thinkers who will shape the future of food, health, and sustainability. By blending scientific rigor with creative problem-solving, we aim to inspire students to innovate solutions for global nutrition challenges. We are committed to fostering an environment where knowledge, research, and community engagement intersect, empowering students to lead transformative change in food systems and public health worldwide.

Objectives of the Department

1. To cultivate a strong academic foundation in food science and nutrition that prepares students for leadership roles in research, education, and industry.
2. To conduct pioneering research in areas such as food safety, food processing, nutrition, and dietetics to improve health outcomes globally.
3. To foster partnerships with industries and healthcare institutions to bridge the gap between scientific advancements and real-world applications.
4. To promote community awareness and education on healthy eating, sustainable food choices, and disease prevention through nutrition.
5. To continually update and expand the curriculum, ensuring that students are equipped with the latest knowledge, technologies, and practices in food science and nutrition.
6. To support sustainable food systems by researching and advocating for environmentally responsible practices in food production, packaging, and waste reduction.

SOURCE OF INSPIRATION

Patron and Vice Chancellor

Dr. (Prof) Kailash Sodani, is an accomplished academic leader, having served as Vice-Chancellor of two government universities—Maharshi Dayanand University in Ajmer and Govind Guru Tribal University in Banswara. His career began in 1982 as an Assistant Professor at MohanLal Sukhadia University (MLSU) in Udaipur, where he later held several important roles, including Dean of Student Welfare and Chief Warden. Dr. Sodani is known for his dedication to education, his commitment to expanding academic programs, and his contributions to the growth of universities. He emphasizes hard work, positivity, and continuous learning, often suggesting that students make use of libraries and laboratories for their academic growth. Beyond academia, Dr. Sodani is a prolific writer and thinker, contributing articles to newspapers on societal issues and authoring a book on the implementation of the New Education Policy, 2020. He values global exposure and encourages traveling to enhance knowledge.

Head of the Department

Prof. Ritu Mathur, presently working as Professor and Head in the Department of Food Science and Nutrition at the M.D.S. University Ajmer. She has been associated with the Department since 1995 and has a total teaching and research experience of 30 years. Done graduation and PG from the University of Rajasthan, securing first position both in BSc Home Science, and in MSc Foods and Nutrition, recipient of the Maya Devi Grover memorial Gold medal for topping in the combined faculty of Home Science. Also a recipient of JRF and SRF from the UGC. Has been the Principal Investigator in a UGC Major Research Project. Has held various prestigious positions in the University like that of Director research, Dean post graduate studies etc. Recipient of several academic awards including the best extension worker award for outstanding performance and excellence in education and research. About 31 research publications in National and international journals with high citations, h and i-10 indices. Been an invited speaker in national and international conferences and chaired scientific sessions. Five scholars have been awarded Ph.D. degrees and five research scholars are at present registered. Life member of the Indian Dietetic Association and the Nutrition Society of India. Member editorial board of some national journals.

Guiding Light

Founder Member and Former Professor and Head

Dr. (Prof) Gulraj Kalsi Kohli has been a distinguished Professor and Head of the Department of Food Science and Nutrition at Maharshi Dayanand Saraswati University, Ajmer, where she has been a faculty member for over 30 years. She holds a Ph.D. in Foods & Nutrition from Punjab Agricultural University and has extensive experience in teaching, research, and academic administration. Dr. Kohli has published numerous research papers and books, guided several Ph.D. and M.Sc. students, and played a significant role in curriculum development for various programs in Foods and Nutrition. She has held key positions such as Dean of Postgraduate Studies, Director of UGC-Academic Staff College, and is an active member of several professional organizations, including the Nutrition Society of India. Additionally, she has contributed to numerous committees, both at the university and national levels, and has been involved in organizing and participating in various academic seminars and workshops globally.

Former Professor and Head

Dr. (Prof.) Bharti Jain brings with her an impressive 38 years of teaching experience in the field of Food Science and Nutrition. She completed her B.Sc. (Hons) in Food Science and M.Sc. (Hons) in Foods and Nutrition from the College of Home Science, MLSU, Udaipur, and earned her Ph.D. from Banasthali Vidyapeeth, Rajasthan. Dr. Jain began her career as a lecturer at Banasthali Vidyapeeth, where she worked for eight years before joining MDSU University as Assistant Professor. Her dedication and hard work led to her promotion as the Professor and Head of the Department. A recipient of the Major Research Project funded by UGC, Dr. Jain has an extensive research portfolio with numerous publications in both National and International journals, garnering high citations and impressive h-index and i-10 indices. She has been an invited speaker at several national and international conferences and has chaired scientific sessions. Throughout her career, Dr. Jain has supervised numerous Ph.D. scholars, among which 7 have been awarded doctoral degrees, while 3 are currently pursuing research under her guidance.

Academic Guest Faculty

Mrs. Poonam Pareek, Gold Medalist in M.Sc. F&N, is an Academic Guest Faculty in Foods and Nutrition at MDS University, with over 20 years of experience in teaching, research, and product innovation. A passionate academician and entrepreneur, she specializes in culinary arts and product development, with a keen focus on promoting nutrition and health through sustainable food practices. She has also presented many special lectures in research-based papers in organization such as Rajasthan University, Jaipur etc. Her journey is marked by her dedication to empowering individuals through education and culinary expertise, inspiring healthier lifestyles while preserving the essence of Indian culinary traditions. She is the visionary behind Vishi Blends, a brand dedicated to offering healthy and flavorful millet-based premixes and superfood-infused spice blends, thoughtfully crafted to suit the evolving taste preferences of modern consumers.

Dr Swati Mathur has been associated with the Department of Food Science and Nutrition, M.D.S. University, Ajmer since the previous ten and a half years. She cleared the National Eligibility Test for Lectureship in June 2013 along with award of Junior Research Fellowship in the same year. She was promoted to SRF in October 2017. She also cleared the State eligibility test for Lectureship (SET) held by RPSC in 2012 and has been recipient of Gold Medal in Master's in Foods and Nutrition 2011. She competed her Ph.D. in 2022. Dr Swati Mathur has presented 7 papers (5 research and 2 review) in 5 International and 2 National Conferences and has published four research and one review paper in International Journals. She has also guided research studies at post graduate levels.

Dr. Sakshi Pathak, a renowned dietician and academic, is a Ph.D. holder in Food and Nutrition with UGC NET-JRF qualifications and a diploma in Sports Nutrition. Currently serving as an Academic Guest Faculty at Maharshi Dayanand Saraswati University, Ajmer, she has an impressive career as a Clinical Nutritionist at Fortis Escorts Hospital, Jaipur. Her research on the therapeutic potential of Moringa oleifera and numerous publications in reputed journals highlight her innovative contributions to nutrition science. A life member of the Indian Dietetic Association and the Indian Society of Clinical Nutrition, Dr. Pathak has been recognized for her excellence in diet counselling with prestigious awards, including the Economic Times Health Award and Best Dietician in Rajasthan. Reviewer of some national and international journals.

Ms. Apurva Sharma, a Gold Medalist in Masters in Foods and Nutrition from MDS University, is a UGC NET-qualified aspirant currently pursuing her PhD at the same institution. With significant experience in various healthcare sectors, she is a certified diabetes educator and an accomplished speaker, having conducted several online webinars and nutrition sessions. Currently serving as an academic guest faculty at MDS University, she is also a lifetime member of the Indian Dietetic Association (IDA) and the Nutrition Society of India (NSI). She has attended various workshops and had presented 3 review papers in various national and international conference. Her expertise, enthusiasm, and dedication make her an important asset to both academia and the healthcare community.

Mrs. Apoorva Yadav is presently working as a guest lecturer and as a research scholar in in the Department of Food Science and Nutrition at the M.D.S. University Ajmer. She has done her graduation from IIS University and post-graduation from MDS University, Ajmer in Food Science & Nutrition. She has an experience of working as a consultant dietician in a reputed health industry. After qualifying NET exam in 2021 she has joined MDS university as an Academic Guest Faculty. She has attended various workshops and had presented 3 review papers in various national and international conference. She is a life time member of Indian Dietetic Association, Rajasthan Chapter.

Dr. Poonam Mohan is a distinguished faculty member with an impressive teaching experience of over 31 years. She holds an Undergraduate (UG) and Postgraduate (PG) in Biochemistry, and PhD in Medicinal Chemistry from the University of Allahabad. Throughout her academic journey, she has published more than 10 papers in reputed National and International Journals, contributing significantly to the field. Dr. Mohan served as the Head of Department (HOD) at Kanpur's SCMAT College, where she later advanced to the role of Principal in 2008. After her retirement from Kanpur, she joined MDS University (MDSU) in 2014, where she has been imparting her expertise to students across various subjects, including Biochemistry, Microbiology, and other core disciplines. Her extensive experience and dedication to education have made her a valuable asset to the academic community.

Dr. Rashmi Dadhich holds an M.A. in English, B.Ed., PGCTE, and a Ph.D., bringing over 15 years of experience in teaching both undergraduate and postgraduate classes. Her expertise spans various areas of English literature and language, supported by her academic qualifications and extensive teaching experience. She is an active researcher and has participated in numerous national and international conferences, published chapters in books and presented research papers on diverse topics such as English language teaching, communication skills, and digital learning. Her published papers explore areas like business in literature, the role of English in employability, and technology-assisted language learning. She is also an active member of many academic forums.

Dr. Sonia Deval, Ph.D, NET, SET, M.Phil . She owns the 10 years of teaching experience in various branches of the subject. She has published 9 research papers in various UGC-CARE-listed National and International journals. Her 1 chapter has also been published in edited book of National repute. She has participated and presented research papers in more than 12 National and International conferences and seminars. She was a member in the Organising Committee at the National Seminar in 2016. She has also supervised 3 M.A/ M.Phil dissertations. Apart from this, she also attains expertise in Research and Statistics and is associated with various other departments in the university.

Mrs. Kshipra Jain has a strong academic background with an M. Phil. in Virology, a master's degree in biotechnology and Botany, and has qualified the CSIR UGC NET JRF and GATE in Biotechnology. With research experience in virology, she has developed a deep expertise in molecular biology, food microbiology, and conducting virology experiments. Kshipra also brings 8 years of teaching experience, during which she has shared her knowledge and skills with students, particularly in the fields of molecular biology and microbiology, shaping the next generation of scientists.

Bhagavad Gita 17.7:

"Foods that increase life, purify one's existence, give strength, health, and happiness, and are juicy, fatty, wholesome, and pleasing to the heart, are dear to those in the mode of goodness."

This verse emphasizes the significance of consuming nourishing foods that promote physical and mental well-being, which aligns with a holistic approach to health.

Courses Offered in the Department

- **Research (Ph.D.)**: Ph.D. in Nutrition
- **Post-Graduate Level**: M.Sc. in Foods and Nutrition
- **Graduate Level**: B.Sc. in Food Science and Nutrition
- **P.G. Diploma**: P.G. Diploma in Nutrition and Dietetics

Scope of the Subject

1. **Hospitals and Clinics**
    - Dietitians and nutritionists design specialized meal plans and therapeutic diets, improve patient recovery, and prevent nutrition-related diseases.
2. **Teaching and Academia**
    - Opportunities in academic institutions, universities, and colleges, including research and teaching roles at undergraduate, post-graduate, and research levels.
3. **Research**
    - Hiring in research departments to contribute valuable insights and advancements in food and nutrition sectors.
4. **Corporate Sales Sector**
    - Roles in food companies focusing on product development, marketing, and sales strategies, particularly in nutrition-based product development and health-focused marketing.
5. **Corporate Nutritionists**
    - Nutritionists hired by large organizations to create wellness programs for employees, promoting healthy eating habits and improving productivity.
6. **Personal Nutrition Consultation**

    - One-on-one consultations in areas like weight management, sports nutrition, and dietary plans for chronic diseases such as diabetes and hypertension.

7. **Food Industry (Manufacturing and Processing)**
    - Roles for food scientists, quality analysts, and food engineers to develop and maintain the quality of mass-produced products.
8. **Pharmaceutical and Nutraceutical Industries**
    - Focus on food-based supplements, functional foods, herbal supplements, and fortified products like multivitamins and probiotics.
9. **Non-Governmental Organizations (NGOs) and Community Organizations**
    - Dietitians working on food security, malnutrition, and nutritional education in public health organizations and government bodies.
10. **Sports Nutrition**

- Application of nutrition science to improve athletic performance and recovery.

11. **Government Organizations**

- Inspect food establishments to ensure hygiene and safety standards, collect food samples for lab testing, and educate the public and businesses on food safety regulations.

12. **Public Health Nutritionists**

- Work in government health organizations to address nutrition issues at the community level, designing and implementing public health programs.

13. **Entrepreneurship in Food Science and Nutrition**

- Entrepreneurs can create and market health-focused food products such as protein bars, nutritional snacks, gluten-free products, and fortified foods.

Annual calendar – Days and Weeks

 January

- 10: Dietetics Day

 February

- 4: World Cancer Day

 March

- 4: National Safety Day
- 12: World Kidney Day
- 24: World Tuberculosis Day

 April

- 7: International Food Festival
- 7: World Health Day

 May

- 19: World Hepatitis Day
- 31: World No Tobacco Day

 June

- 14: World Blood Donor Day
- 26: International Day Against Drug Abuse and Illicit Trafficking

 July

- 1: Doctors’ Day
- 31: World Hepatitis Day

 September

- 1-7: National Nutritional Week
- 8: World Physical Therapy Day
- 29: World Heart Day

 October

- 15-19: World Obesity Awareness Week
- 16: World Food Day
- 29: World Stroke Day

November

- 10: World Immunization Day
- 14: World Diabetes Day

December

- 1: World AIDS Day
- 3: International Day of Persons with Disabilities
- 19: International Millets Day

Talk on Dietetics Day by Prof. Ritu Mathur (Head of the Department)

Celebration of International Millets Day

Departmental activities

World Breast Feeding Week

- Activity: Poster competition, Nutrient Rich recipe competition, Development of low-cost Weaning foods, Creating awareness in pregnant and lactating mothers regarding the significance of breastfeeding
- Duration: Aug 1-8, 2024

National Nutrition Week

- Activity: Organization of Nutrition quiz, Special lectures by doctors and Nutritionists on topics of Health and Nutrition, Nutritional status assessment, Body composition analysis, and Dietary counselling camp for university employees by the Post Graduate students
- Duration: Sept 1-7, 2024

Educational Visit

- Activity: Visits to Dairy, Food Manufacturing Spice Unit, Institutional Hotels, and Hospitals for various training sessions

Orientation Program for the New UG & PG Courses

- Activity: Orientation for new undergraduate and postgraduate students
- Duration: July 2024

Diploma Internship Report Seminar

- Activity: Seminar including a detailed account of practical training and professional guidelines that students have done in reputed hospitals as dietetic interns, with summaries of case studies, nutritional assessment, and counselling

M.Sc. Dissertation Report

- Activity: Presentation of dissertation work by final year students, strengthening their research with in-depth studies, analysis, and theoretical knowledge
- Duration: December 2024

Career Counselling Workshop

- Activity: Interactive workshop providing skills, opportunities, education, and counselling on how to excel in various fields of nutrition

 Preservation Workshop

- Activity: 3-day workshop on the preparation of jams, jellies, and pickles through the natural fermentation process
- Duration: September 2024

 NSS Activities

- Activity: Various NSS activities scheduled throughout the year, aimed at involving students in social service and community development, promoting holistic development.

"Nutrition is not just about eating; it’s about nourishing your body and mind with the right foods to fuel your health, vitality, and well-being."

Teacher's Meet, 2024

Farewell of Prof. Bharti Jain Ma'am, 2024

Preservation Workshop, 2024

National Nutrition Week Celebration, 2024

Unity in Diversity

Growing and Importance of Microgreens

Pasta Making Culinary Class

Nutritious Recipe Presentation

NSS Activity

Educational Visit

Ph.D. Degree Awarded in the Department of Food Science and Nutrition

S.No.	Name of the Candidate	Supervised By	Topic of the Research	PhD Degree Awarded In
1.	**Ranjana Gupta**	**Prof. Gulraj Kalsi Kohli**	Development of Information, Education and Communication Material on Nutritional and Health of Family for Rural Adolescent Girls	**2000**
2.	**Abha Mundra**	**Prof. Gulraj Kalsi Kohli**	Iron Status of Young Adult Women (18-24 years) of Ajmer – Situational Analysis and Development of Low Cost Iron Rich Recipes	**2000**
3.	**Sarla Lakhawat**	**Prof. Gulraj Kalsi Kohli**	Development of Database on Physical Growth of Children (6-12 years) and Effect of Nutrition Education on Knowledge, Attitude and Behavior of School Children from Rural Ajmer	**2000**
4.	**Ankita Gupta**	**Prof. Gulraj Kalsi Kohli**	Effect Of Feeding Soybean (Glycine Max) to Peri and Postmenopausal Women on their Climacteric Symptoms, Serum Lipid Profile and Bone Mineral Density	**2004**
5.	**Sister Pearl D'Souza**	**Prof. Gulraj Kalsi Kohli**	Impact of the Correction of Anemia on the Nutritional Status and Mental Performance of Urban Adolescent Girls (16-18 years)	**2004**
6.	**Nisha Kumawat**	**Prof. Gulraj Kalsi Kohli**	Development of Nutritious Recipes by Incorporating Dry Green Leafy Vegetable Powder and Impact of Feeding them on the Nutritional Status of School Age Children (6-9 years)	**2006**
7.	**Kirti Mathur**	**Prof. Bharti Jain**	Evaluation of Maternal Nutritional Profile and Associated Complications of Pregnancy Induced Hypertension with Perinatal	**2006**

			Outcome	
8.	**Divya Kuvera**	**Prof. Bharti Jain**	Nutritional Profile, Impact of Nutrition Education on Dietary Habits and Behavior of Middle Aged Diabetics and Acceptability of Products Developed from Traditional Hypoglycemic Agents	**2006**
9.	**Anil Kumar Patni**	**Prof. Ritu Mathur**	Detection of Various Pesticide Residues and Fatty Acid Profiles of Branded and Unbranded Edible Oil Samples of Ajmer City by Gas Liquid Chromatographic Technique	**2008**
10.	**Nandini Johari**	**Prof. Ritu Mathur**	"Stevia rebaudiana – A sweet herb" -Nutrient Composition, use as a Sweetener Substitute and its Hypoglycemic and Hypolipidemic Effect on Non-Insulin Dependent Diabetes Mellitus Patients	**2010**
11.	**Vinita Rai**	**Prof. Ritu Mathur**	Nutritional Profile and Psycho-Social Factors in the Etiology of Acid Peptic Disease in Middle Aged Men and Women of Ajmer City	**2011**
12.	**Renuka Sharma**	**Prof. Gulraj Kalsi Kohli**	Risk Factor of Chronic Degenerative Diseases in Residents of Beawar (Ajmer, Rajasthan) with Special Reference to Coronary Heart Disease in Adult Men (30-60 years)	**2012**
13.	**Namita Moyal**	**Prof. Gulraj Kalsi Kohli**	Nutritional and Health Consequences Associated with Food Insecurity in Elderly Males (60-80 years) of Ajmer City	**2012**
14.	**Barkha Bhatnagar**	**Prof. Bharti Jain**	Chemical Analysis of Proximate Principles and Protease Inhibitors in Different Varieties of Soyabean (Glycine Max) in Rajasthan and Development of Baked Food Products	**2012**

15.	**Navita Shrivastava**	**Prof. Bharti Jain**	A study on the Health Educational and Socioeconomic Status of Rural Adolescent Girls (Age 13-18 years) of Ajmer District and its Correlation with their Value System	**2015**
16.	**Asem Jayanti Devi**	**Prof. Gulraj Kalsi Kohli**	Efficacy of Yogic Life Style Modification on NIDDM Patients	**2016**
17.	**Garima Lakhotia**	**Prof. Gulraj Kalsi Kohli**	Nutritional Analysis of Selected Commercial and Home-made Fast Foods and their Preferences in Youth	**2022**
18.	**Swati Mathur**	**Prof. Bharti Jain**	Nutritional Profile and Weight Management Practices among Adolescent Girls and Young Women	**2022**
19.	**Meenakshi Jhakar**	**Prof. Ritu Mathur**	Impact of Supplementation of Selected Arid Foods on Lipid Profile and Blood Pressure Levels of Patients Suffering from Mild Hypertension	**2023**
20.	**Shweta Singh**	**Prof. Bharti Jain**	Impact on Nutrition Counselling on Dietary Behavior of School Going Children and their Parents	**2023**
21.	**Ruchi Udawat**	**Prof. Ritu Mathur**	A study on Thyroid Disorders, Glycosylated Hemoglobin Levels and Dietary Patterns of Children (7-14 years) suffering from Type 1 Diabetes Mellitus of Ajmer City	**2023**
22.	**Sakshi Pathak**	**Prof. Bharti Jain**	Harnessing Potential of Drumstick Leaves (Moringa Oleifera) for Value Addition and Therapeutic Prospects	**2023**

Publications and Presentations of Research Paper 2024-25

Department of Home Science, University of Rajasthan, Jaipur – 2024

- **Sharma Apurva and Mathur Ritu**
    - Topic: *Unlocking Health Secrets: Bioactive Marvels in Indian Herbs and Spices, Exploring their Roles and Synergies for Wellness*
- **Yadav Apoorva and Mathur Ritu**
    - Topic: *Probiotics and Mental Health: Exploring the Gut-Brain Connection*
- **Pathak Sakshi and Jain Bharti**
    - Topic: *Effect of Dried Moringa Oleifera Leaf Powder on Blood Pressure in Individuals with Dyslipidaemia*
- **Pareek Poonam, Mathur Ritu, and Jain Bharti**
    - Topic: *Development & Standardization of Value-Added Snacks Using Millets-Based Premix and Assessing its Acceptability by College Students*

Ajaimeru Diabetes Summit by Ajaimeru Diabetes Society, 2024

- **Pathak Sakshi and Jain Bharti**
    - Topic: *Role of Superfoods in Type 2 Diabetes Care: Insight from Recent Reviews*
- **Pareek Poonam, Mathur Ritu, and Jain Bharti**
    - Topic: *Development and Acceptability Evaluation of Millet-Based Snacks for Diabetes*

56th Annual National Conference of Nutrition Society of India, Pune, 2024

- **Yadav Apoorva and Mathur Ritu**
    - Topic: *Role of Psychobiotics in Irritable Bowel Syndrome & Inflammatory Bowel Disease Patients: A Microbial Mechanism*

Engaging Nutrition Articles

Exploring Nutraceuticals: Their Sources and Health Benefits

Nutraceuticals refer to food-derived products that provide health benefits beyond basic nutrition. These can include vitamins, minerals, herbs, amino acids, and other bioactive compounds. They play an important role in diet and overall health due to their potential to promote wellness and prevent or manage certain diseases. Nutraceuticals can be sourced directly from the foods we eat, and many of them are rich in bioactive compounds that provide health benefits.

Common dietary sources of nutraceuticals and their associated benefits:

1. Omega-3 Fatty Acids

- **Sources**: Fatty fish (salmon, mackerel, sardines), flaxseeds, chia seeds, walnuts, hemp seeds, and algae oil.
- **Benefits**: Omega-3s support cardiovascular health by lowering blood pressure and reducing triglycerides. They also have anti-inflammatory effects and promote brain health.

2. Antioxidants (Vitamins C, E, and Polyphenols)

- **Sources**:

Vitamin C: Citrus fruits (oranges, lemons), strawberries, bell peppers, broccoli, and kale.

Vitamin E: Nuts (almonds, hazelnuts), seeds (sunflower seeds), vegetable oils (olive oil, sunflower oil), and spinach.

Polyphenols: Berries (blueberries, strawberries), dark chocolate, green tea, red wine, apples, and olives.

- **Benefits**: These antioxidants help neutralize free radicals in the body, reducing oxidative stress and lowering the risk of chronic diseases like cancer and cardiovascular disease. They also support skin health and immune function.

3. Probiotics and Prebiotics

- **Sources**:

Probiotics: Fermented foods such as yogurt, kefir, sauerkraut, kimchi, miso, and kombucha.

Prebiotics: Foods rich in fiber, such as garlic, onions, leeks, bananas, asparagus, and whole grains.

- **Benefits**: Probiotics help maintain a healthy gut microbiome, promoting digestive health and supporting the immune system. Prebiotics feed beneficial gut bacteria, improving digestion and overall health.

4. Fiber

- **Sources**: Fruits (apples, pears, berries), vegetables (broccoli, Brussels sprouts, carrots), whole grains (oats, barley, quinoa), legumes (beans, lentils), and seeds (chia seeds, flaxseeds).
- **Benefits**: Fiber aids in digestive health, helps regulate blood sugar levels, and promotes heart health by lowering cholesterol. It also supports weight management by increasing feelings of fullness.

5. Curcumin (from Turmeric)

- **Sources**: Turmeric (often consumed as a spice in curries, or in teas and smoothies).
- **Benefits**: Curcumin is a potent anti-inflammatory and antioxidant compound. It has been linked to reducing the risk of chronic diseases such as arthritis, heart disease, and cancer, and it may help improve brain function and reduce symptoms of depression.

6. Flavonoids

- **Sources**:

Citrus fruits: Oranges, grapefruits, lemons.

Berries: Blueberries, strawberries, blackberries.

Dark chocolate: Especially varieties with at least 70% cocoa.

Red wine: In moderation.

- **Benefits**: Flavonoids have antioxidant and anti-inflammatory properties that help protect against cardiovascular disease, support cognitive function, and reduce the risk of certain cancers.

7. Coenzyme Q10 (CoQ10)

- **Sources**: Fatty fish (salmon, sardines), organ meats (liver, kidney), spinach, broccoli, cauliflower, and whole grains.
- **Benefits**: CoQ10 is involved in energy production in cells and has antioxidant properties. It is known to support heart health and may improve energy levels and reduce symptoms of conditions like heart disease and migraines.

8. Lycopene

- **Sources**: Tomatoes (especially cooked or in sauces), watermelon, pink grapefruit, red peppers.
- **Benefits**: Lycopene is an antioxidant that has been associated with a reduced risk of prostate cancer, heart disease, and eye conditions like macular degeneration.

9. Vitamin D

- **Sources**: Fatty fish (salmon, mackerel), egg yolks, fortified foods (milk, cereals), and exposure to sunlight (which helps the body produce Vitamin D).
- **Benefits**: Vitamin D supports bone health by aiding calcium absorption, boosts immune function, and may reduce the risk of chronic diseases such as osteoporosis, cardiovascular disease, and diabetes.

10. Magnesium

- **Sources**: Leafy green vegetables (spinach, kale), nuts (almonds, cashews), seeds (pumpkin seeds, sunflower seeds), whole grains (brown rice, oats), legumes (black beans, chickpeas).
- **Benefits**: Magnesium plays a key role in over 300 biochemical reactions in the body, supporting muscle function, nerve function, bone health, and cardiovascular health. It may also help alleviate symptoms of anxiety and improve sleep quality.

11. Saponins

- **Sources**: Legumes (soybeans, lentils), beans (chickpeas), quinoa, and some vegetables like spinach.
- **Benefits**: Saponins have antioxidant and anti-inflammatory effects, may help lower cholesterol levels, and support immune health.

12. Beta-glucans

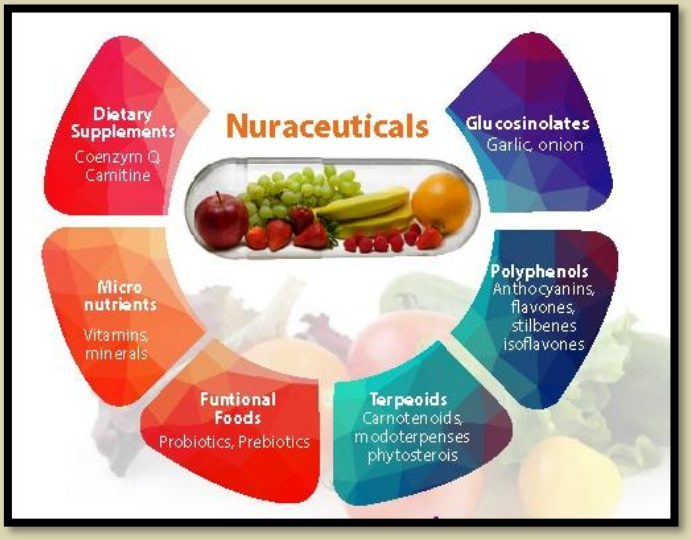
- **Sources**: Oats, barley, mushrooms and yeast.
- **Benefits**: Beta-glucans are known to support immune function, lower cholesterol, and improve blood sugar regulation.

13. CLA (Conjugated Linoleic Acid)

- **Sources**: Grass-fed beef, lamb, dairy products (milk, cheese, yogurt).
- **Benefits**: CLA is thought to promote fat loss, improve insulin sensitivity, and support muscle growth. It also has potential anti-inflammatory effects.

14. Anthocyanins

- **Sources**: Dark-colored fruits such as beet roots, blueberries, blackberries, raspberries, cherries, and grapes.
- **Benefits**: These powerful antioxidants help combat oxidative stress, reduce inflammation, and improve heart health. They may also play a role in protecting against cognitive decline.



Conclusion:

Many everyday foods contain nutraceuticals that can support overall health and well-being. A balanced and varied diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats can provide a wide array of beneficial bioactive compounds. Incorporating a variety of these foods can help promote disease prevention, improve physical and mental health, and support longevity. Integrating nutraceuticals into a balanced diet can enhance overall well-being, complement medical treatments, and prevent a variety of health issues.

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Decoding the DNA Diet- Genomics & Nutrition

What is Nutrigenomics?

Nutrigenomics explores the relationship between genes and nutrition, focusing on how food affects gene expression and how genetic variations influence our body's response to nutrients. The core idea is that our DNA plays a significant role in determining how we metabolize food, absorb nutrients, and respond to specific dietary patterns. It help us to tailor our diets according to our genes.

In recent years, the connection between our DNA and diet has become a focal point in nutritional science. As advancements in genetics continue, researchers are uncovering how our unique genetic makeup influences our dietary needs, metabolism, and overall health. This emerging field, known as *nutrigenomics*, offers exciting insights into the personalized approach to nutrition.

Potential benefits of nutrigenomics

- **Personalised nutrition-** nutrigenomics can help people adapt their diets based on their genetic makeup. This can prevent diet-related diseases and increase life expectancy.
- **Understanding toxicity-** nutrigenomics can help people understand about the safety and toxicity of different nutrients.
- **Avoid unnecessary supplements-** nutrigenomics can help people avoid supplements that are not required for health.

- **Understanding Vitamin D-** nutrigenomics can help people understand how their bodies react to Vitamin D.
- **Helps to achieve & maintain a healthy weight.**
- **Helps to optimize nutrient intake.**
- **Helps to enhance the fitness programmes**.
- **Helps to improve overall well-being.**
- **Helps to mitigate injuries**.

Genetic Variations and the Influence of DNA

Each individual has unique genetic variations, or polymorphisms, that impact their nutritional needs and responses. For example:

- **Lactose Intolerance:** Variations in the *LCT* gene can reduce the ability to digest lactose, the sugar found in dairy products.
- **Caffeine Sensitivity:** Differences in the *CYP1A2* gene affect how quickly the body processes caffeine, influencing the sensitivity to coffee.
- **Fat Metabolism:** The *APOA2* gene can alter how efficiently saturated fats are metabolized, affecting cholesterol levels and heart health.

Nutrient Absorption and Metabolism

Genetic variations can also influence how the body absorbs and utilizes nutrients. For example, mutations in the *MTHFR* gene can affect folate metabolism, increasing the risk of certain health issues and highlighting the need for specific dietary interventions.

Personalized Nutrition- A rising trend in present day time

The insights from nutrigenomics have given rise to personalized nutrition plans. These customized dietary strategies consider an individual's genetic profile to optimize health and prevent disease. Benefits of personalized nutrition include:

- **Improved Adherence:** Tailored meal plans are easier to follow.
- **Enhanced Health Outcomes:** Diets target specific genetic predispositions.
- **Prevention of Deficiencies:** Genetic insights address unique metabolic needs.

Challenges and Ethical Considerations

While nutrigenomics holds great promise, there are challenges to consider:

- **Complex Gene-Diet Interactions:** The relationship between genes and nutrition is intricate and influenced by lifestyle and environmental factors.
- **Cost and Accessibility:** Genetic testing and personalized nutrition services remain expensive and out of reach for many.
- **Privacy Concerns:** Ethical concerns arise around data privacy and the potential misuse of genetic information.

The Future of Diet and DNA

As nutrigenomics continues to evolve, the potential for precise and effective dietary guidance grows. However, it remains essential to approach this field with a balanced perspective, ensuring that scientific advancements are applied responsibly and ethically.

The connection between DNA and diet represents a transformative approach to health and wellness. By understanding how our genes influence our nutritional needs, we can move closer to a future where diet plans are no longer one-size-fits-all but tailored to each individual's unique genetic blueprint. Nutrigenomics isn’t just the future of nutrition—it’s a key to unlocking optimal health today.

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Intermittent Fasting Uncovered: What You Need to Know

Intermittent fasting has gained immense popularity as a strategy for weight management and overall health improvement. Despite its rising acceptance, numerous myths surround this eating pattern, leading to confusion. Let's separate fact from fiction to help you make informed decisions.

What is Intermittent Fasting?

Intermittent fasting is an eating pattern that alternates between periods of eating and fasting. Unlike many diets that focus on what to eat, intermittent fasting emphasizes when you eat. Research shows that fasting for specific periods each day or eating just one meal a couple of days a week may have significant health benefits.

This approach prolongs the period when your body has burned through calories consumed during the last meal and begins burning fat. After hours without food, the body exhausts its sugar stores and starts burning fat, a process known as metabolic switching.

How Does Intermittent Fasting Work?

There are several ways to implement intermittent fasting, all based on choosing regular time periods to eat and fast. For instance:

- **16/8 Method**: Fasting for 16 hours and eating during an 8-hour window.
- **5:2 Diet**: Eating normally for five days and reducing calorie intake significantly for two non-consecutive days.
- **Alternate-Day Fasting**: Alternating between fasting and eating days.
- **Eat-Stop-Eat**: Fasting for 24 hours once or twice a week.

Key Benefits of Intermittent Fasting

- **Weight Management**: Helps regulate calorie intake and boosts fat loss.
- **Improved Insulin Sensitivity**: Reduces the risk of type 2 diabetes.
- **Cellular Repair**: Promotes autophagy, where cells remove damaged components.
- **Heart Health**: May improve blood pressure and cholesterol levels.

- **Brain Health**: Protects against neurodegenerative diseases and enhances mental clarity.

Myths and Facts About Intermittent Fasting

Myth 1: Intermittent Fasting Causes Starvation Mode

Fact: Starvation mode refers to the body's adaptation to prolonged calorie restriction, leading to a slower metabolism. Short-term fasting, as practiced in Intermittent fasting , does not trigger starvation mode. Instead, it can improve metabolic flexibility and fat-burning efficiency.

Myth 2: You Can Eat Anything During Eating Windows

Fact: While Intermittent fasting focuses on when you eat, what you eat still matters. Consuming nutrient-dense foods is essential for overall health and achieving your goals. Overindulging in processed foods can negate the benefits of Intermittent fasting.

Myth 3: Fasting Leads to Muscle Loss

Fact: The body prioritizes burning fat over muscle during short-term fasting. Additionally, incorporating strength training and consuming adequate protein during eating windows can help preserve lean muscle mass.

Myth 4: Intermittent Fasting is Suitable for Everyone

Fact: Intermittent fasting may not be ideal for everyone. Pregnant or breastfeeding women, individuals with eating disorders, and those with specific medical conditions should consult a healthcare provider before starting Intermittent fasting.

Myth 5: Fasting Slows Down Your Metabolism

Fact: Short-term fasting can temporarily increase metabolism due to a rise in norepinephrine levels. However, prolonged fasting or severe calorie restriction may lead to a slower metabolism over time.

Myth 6: Intermittent Fasting Is Just Another Fad Diet

Fact: Intermittent fasting is not a fad but a scientifically supported eating pattern. Research indicates potential benefits, including weight loss, improved insulin sensitivity, and reduced inflammation. However, long-term studies are still needed.

Intermittent fasting is a flexible and potentially effective approach to improving health and managing weight. However, like any lifestyle change, it's essential to separate myths from facts and tailor the practice to your unique needs. Consulting a healthcare professional or dietitian can provide personalized guidance and ensure safe implementation.

Remember, the best dietary approach is the one that aligns with your goals, preferences, and overall well-being.

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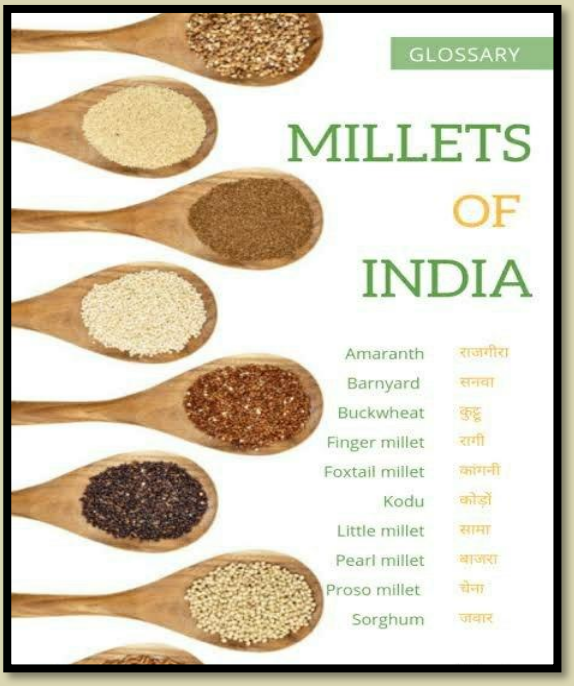
The Promising Potential of Millets in Recent Times

In today's world, where health and nutrition take center stage, millets have emerged as a superfood with immense potential. These ancient grains, including pearl millet, finger millet, sorghum, and kodo millet, are powerhouses of essential nutrients, making them an ideal choice for modern diets.

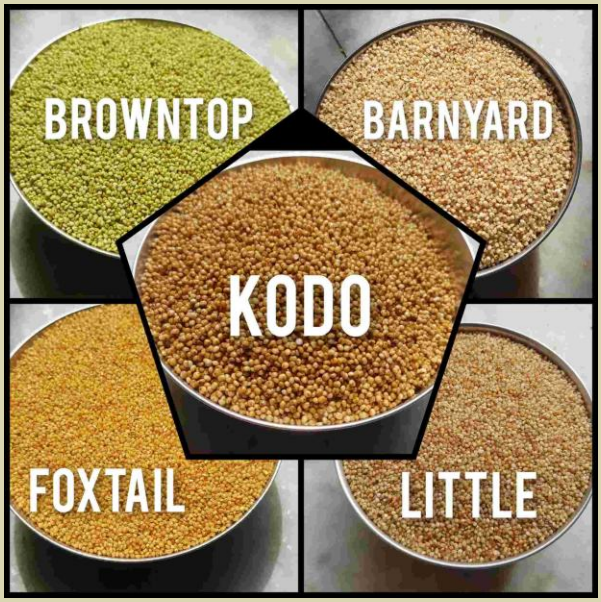


Millets are naturally gluten-free and rich in dietary fiber, supporting digestion and gut health. A study published in the Journal of Food Science and Technology found that finger millet enhances gut microbiota and prevents constipation, contributing to better digestive health. Additionally, their low glycemic index makes millets highly effective in managing diabetes and weight. Research by the Indian Institute of Millet Research (IIMR) has shown that millet-based diets can significantly reduce postprandial glucose levels, offering a reliable solution for individuals with Type 2 diabetes.

These grains also play a pivotal role in cardiovascular health. A study in the International Journal of Food and Nutritional Sciences revealed that consuming pearl millet reduces LDL cholesterol (bad cholesterol) and increases HDL cholesterol (good cholesterol), reducing the risk of heart diseases.

The nutritional benefits of millets extend to adolescents as well. Research in The American Journal of Clinical Nutrition highlights that millets provide essential micronutrients like iron,

zinc, and calcium, which are critical for growth and development. Efforts to incorporate millets into the diets of younger generations are gaining momentum through school meal programs and awareness campaigns. Early exposure to millet-based meals fosters better eating habits, improves cognitive function, and addresses deficiencies like anemia, a common issue among adolescents.



Millets are also gaining popularity as a sustainable food choice. Compared to conventional crops like rice and wheat, millets require less water and fewer resources, making them environmentally friendly. With their versatility, they can be used in a variety of dishes, catering to both health-conscious individuals and those seeking flavorful meals.

As the global population looks toward ancient grains for modern solutions, millets are reclaiming their place as a cornerstone of nutritional well-being. Their potential to combat lifestyle disorders, promote sustainable agriculture, and improve overall health makes them a vital component of today's diet.

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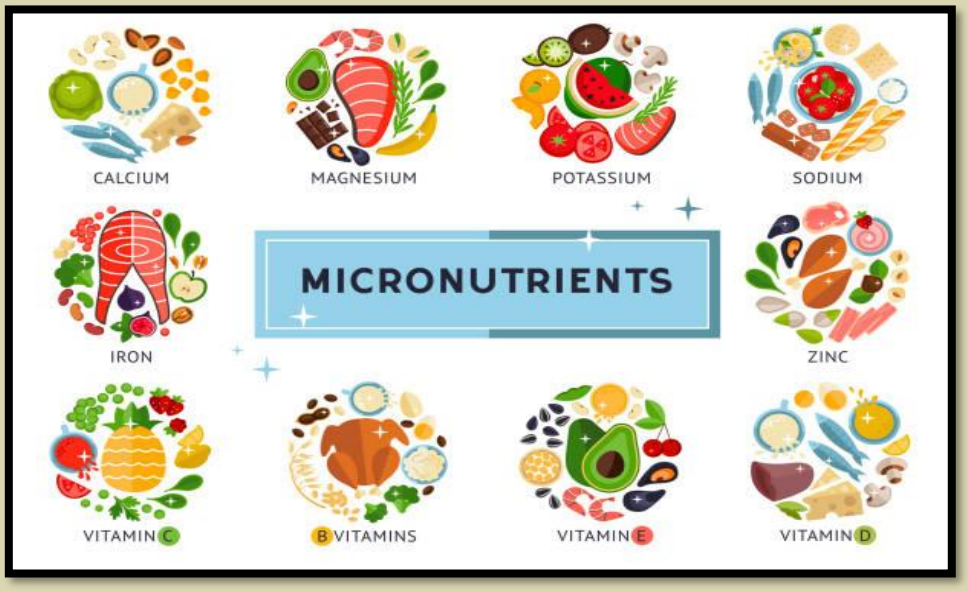
MICRONUTRIENTS- SMALL COMPOUNDS, BIG IMPACT



To maintain a healthy, active life free of disease, human beings need both Macronutrients and Micronutrients. Macronutrients that is Carbohydrates, Proteins and Fats are needed in large quantities, whereas the term Micronutrients implies the Vitamins and Minerals which are needed in small quantities but are absolutely essential for life. Vitamins are organic compounds whereas minerals are inorganic compounds. Vitamins are divided into the fat soluble vitamins A (Retinol), D (Cholecalciferol), E (Tocopherol) and K (Menadione), whereas the water soluble vitamins include vitamin B complex and Vitamin C. Their scientific names are as follows: Vitamin B1- Thiamine (Antineuritic vitamin), Vitamin B2- Riboflavin, Vitamin B3 (Pellagra Preventive Factor)- Niacin, Vitamin B5- Pantothenic Acid, Vitamin B6- Pyridoxine, Vitamin B7- Biotin, Vitamin B9- Folic acid, Vitamin B12- Cyanocobalamin, Vitamin C (Antiscorbutic vitamin)- Ascorbic Acid. The Fat soluble vitamins require fat for their absorption whereas the water soluble vitamins are soluble in water. The body stores the fat soluble vitamins whereas the body cannot store extra amount of water soluble vitamins and loses them in urine beyond that required. The minerals can be divided into Macrominerals (Calcium, Phosphorus, Magnesium, Sodium, Potassium) and Microminerals (Iron, Copper, Iodine, Manganese, Zinc, Copper, Fluorine, Selenium, Chromium).

Being termed as essential nutrients, the following are the functions of the fat soluble vitamins in human body:

a) Physiological functions: Vitamins are required for different physiological functions in the body like Vitamin A is required for normal vision, normal cell growth and differentiation, maintenance of healthy epithelial tissue. Vitamin K is required for normal blood clotting. Vitamin D helps in the formation of bones and teeth since it is required for Calcium absorption.

b) Antioxidant Function: The Fat soluble vitamins, A and E function as antioxidants in the body preventing diseases like Cancers, Cardiovascular diseases, and ageing of cells. Vitamin E is a membrane antioxidant and maintains normal cell integrity.

Role of water soluble vitamins in the body: Since the water soluble vitamins function as coenzymes, the most important function of the water soluble vitamin B complex is to metabolize (oxidise, store, interconvert) the different nutrients in the body.

The water-soluble vitamins function to metabolise Carbohydrate, Proteins and Fats in the body.

1. Vitamin B complex specifically vitamin B1 (Thiamine) is involved in the release of Energy from food like carbohydrates.
2. Vitamins are required for the transmission of nerve signals in the body since they are required for the synthesis of neurotransmitters.
3. Vitamins like B9 (Folic Acid) and Vitamin B12 (Cyanocobalamin) are required for the formation of the genetic material DNA.
4. Vitamins (B9 and B12) also participate in the formation of Red Blood Cells in the body.
5. Vitamin C is a "Wonder Vitamin", which performs numerous functions out of which some are wound healing, iron absorption, amino acid metabolism, and antioxidant function.

Minerals*:* As is for the vitamins, Minerals also perform several functions in the body

a) Formation of compounds:

1. Minerals like Iron are essential for the formation of compounds like Haemoglobin which is the carrier of Oxygen in the body.
2. Iodine, an essential trace element is required for the formation of the Thyroid hormones T3 and T4 (T3- Tri-iodothyronine, T4- Tetraiodothyronine). These hormones control the basal metabolism of the body, assist protein synthesis in the body, assist cognitive development and play a role in reproduction.
3. Minerals like Calcium Phosphate, Magnesium are required for the formation of Bones and Teeth

b) Physiological Functions:

i. Muscle contraction and blood coagulation- Calcium
ii. Acid Base balance- Sodium
iii. Haemoglobin synthesis- Copper and Manganese
iv. Wound healing, Reproduction- Zinc.

c) Antioxidant Function- Zinc along with Vitamin E is considered to be a very important antioxidant nutrient in the body.

d) Biochemical Functions:

i. Formation of high Energy compounds like ATP (Adenosine Triphosphate), DNA (Deoxyribonucleic Acid), RNA (Ribonucleic Acid), - Phosphorus
ii. Enzyme Activation- Magnesium, Potassium, Manganese.

Deficiency of "The Micronutrients" causes specific diseases which may occur at any stage of life cycle. Deficiency of micronutrients may have long term sequalae for an individual. Some of the important well known diseases due to vitamin deficiencies are discussed below:

i. Vitamin B1- Beri-Beri- Anorexia, Heart failure, polyneuropathy
ii. Vitamin B2- Orolingual diseases- Angular stomatitis (Fissures at angles of mouth), glossitis (Shiny Inflamed tongue), cheilosis (Dry chapped appearance of lips)
iii. Vitamin B3- Dermatitis, Diarrhoea, Dementia
iv. Vitamin B6- Hypochromic Microcytic Anaemia (Small Pale RBC's)
v. Vitamin B9- Folic acid deficiency anaemia
vi. Vitamin B12- Neuromuscular weakness, Megaloblastic Anaemia, (Large sized RBC's)

The Fat soluble Vitamins- Deficiency of fat soluble vitamins causes the following diseases:

i. Vitamin A- Xerophthalmia (Dryness in eyes)
ii. Vitamin D- Rickets in children, osteomalacia in Adults
iii. Vitamin E- In search of disease
iv. Vitamin K- Defects in blood clotting

Mineral Deficiencies: Deficiency of Minerals causes the following diseases in human body:

i. Iron Deficiency Anaemia due to deficiency of Iron in diet with manifestations as Headache, Dizziness, Palpitations, Early fatigue.
ii. Iodine Deficiency Disorders (Mental Retardation, Deaf, Mute, Paralysis) due to deficiency of Iodine in diet.
iii. Poor bone growth and development due to deficiency of Calcium in diet.
iv. Electrolyte imbalance due to lack of Sodium and Potassium in diet.
v. Immune deficiencies due to deficiency of Zinc and Iron in diet.
vi. Poor neuromuscular function due to deficiency of Calcium, Magnesium and Potassium in diet.

The most important question is where to get the above nutrients from? *Obtain your Micronutrients from a well balanced diet comprising the following*

i. *Whole Grain Cereals*- Thiamine (B1), Niacin (B3)
ii. *Pulses and Legumes*- Thiamine (B1), Niacin (B3)
iii. *Fresh Fruits and Vegetables*- Folic Acid (B9), Iron, Vitamin A, Vitamin K, Vitamin C
iv. *Milk and Milk Products*- Riboflavin (B2), Vitamin D,
v. *Egg*- Riboflavin (B2), Vitamin D,
vi. *Fermented Foods, Animal Foods*- Cyanocobalamin (B12)

Thus knowing the above indispensable functions of "The Micronutrients", and their deficiencies it can be justified that these "small compounds have big power and big impact".

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Uncovering the Truth About Popular Diet Trends: Do They Work?

From social media influencers to celebrities, everyone seems to be talking about the latest diet trends promising quick weight loss and improved health. With so many options available, it can be difficult to know which ones are effective and which ones are just hype.

Popular diets often promise fast weight loss, increased energy, and enhanced well-being. Some of the most talked-about diets include the keto diet (high in fats, low in carbs), the paleo diet (based on eating like our ancestors), intermittent fasting (eating only at certain times), plant-based diets (focused on plant foods), and the Mediterranean diet (rooted in traditional eating habits from countries bordering the Mediterranean Sea).

Each diet comes with its own set of guidelines and claims to offer unique benefits, but the question is: Do they really work? Are they healthy and sustainable long-term? While some individuals may experience short-term benefits from these diets, they may not be suitable for everyone. Your health, lifestyle, nutritional needs, and personal preferences all play a key role in determining which diet is right for you.

Overview of Popular Diet Trends:

1. **Keto Diet**

The keto diet is a high-fat, high protein, low-carbohydrate diet designed to shift the body into ketosis, where it burns fat for fuel instead of carbohydrates.

Benefits

- Weight Loss: Many people experience rapid weight loss on the keto diet due to the body's shift to burning fat.
- Improved Blood Sugar Control: By reducing carbohydrate intake, the keto diet claims to stabilize blood sugar levels, beneficial for those with diabetes or insulin resistance.
- Enhanced Mental Focus: Some followers report improved mental clarity and focus.

Drawbacks

- Restrictive: The diet requires a significant reduction in carbohydrate intake, which can be challenging to maintain long-term. Very low carbohydrate intake and/or ketosis can lead to unpleasant side effects such as bad breath, headaches, fatigue, and weakness.
- Nutrient Deficiencies: Limiting fruits, vegetables, and grains can lead to deficiencies in essential nutrients like fiber, vitamins, and minerals.
- Keto Flu: Initial side effects, known as the "keto flu," can include fatigue, headaches, and irritability.
- Ketoacidosis Risk: Long-term adherence to the keto diet can increase the risk of developing ketoacidosis, a dangerous condition where blood becomes too acidic, potentially leading to life-threatening complications.

2. **Paleo Diet**

The paleo diet, also known as the caveman diet, focuses on consuming foods that were available to our prehistoric ancestors. This includes meat, fish, fruits, vegetables, nuts, and seeds, but excludes processed foods, grains, and dairy.

Benefits

- Natural Foods: Emphasizes whole, unprocessed foods, which can lead to a healthier diet overall.
- Weight Loss: Many people find they lose weight on the paleo diet due to the emphasis on nutrient-dense, low-calorie foods.
- Reduced Inflammation: By eliminating processed foods and sugars, some people experience a reduction in inflammation and improved digestion.

Drawbacks

- Elimination of Food Groups: Cutting out grains and dairy can lead to potential nutrient deficiencies, particularly in calcium and vitamin D.
- Challenging to Maintain: The restrictive nature of the diet can make it difficult to adhere to long-term, especially in social situations.
- Safety of Consumption and Hygiene: Another drawback is the concern regarding the safety and hygiene of minimally processed foods, which may increase the risk of contamination or foodborne illnesses.

3. **Plant-Based Diet**

A plant-based diet focuses on consuming primarily plant-derived foods, including fruits, vegetables, legumes, nuts, and seeds, while minimizing or eliminating animal products.

Benefits

- Heart Health: Plant-based diets are rich in fiber and antioxidants, which can improve heart health and reduce the risk of cardiovascular diseases.
- Weight Management: Many people find it easier to maintain a healthy weight on a plant-based diet due to its high fiber and low-calorie nature.

- Environmental Impact: Reducing meat consumption can have a positive impact on the environment by lowering greenhouse gas emissions and conserving water resources.

Drawbacks

- Nutrient Considerations: It's important to ensure adequate intake of nutrients like vitamin B12, iron, calcium, and omega-3 fatty acids, which are typically found in animal products.
- Potential for Over-Processed Foods: Some plant-based diets rely heavily on processed meat substitutes, which can be high in sodium and unhealthy fats.

4. **Mediterranean Diet**

The Mediterranean diet is based on the typical eating habits of countries bordering the Mediterranean Sea. It emphasizes fruits, vegetables, whole grains, legumes, nuts, seeds, fish, and olive oil, with moderate consumption of dairy and red wine.

Benefits

- Heart Health: The diet is associated with a lower risk of heart disease due to its focus on healthy fats, fiber, and antioxidants.
- Longevity: Studies suggest that the Mediterranean diet can promote longevity and reduce the risk of chronic diseases.
- Sustainable: The diet is flexible and emphasizes balance, making it easier to maintain long-term.

Drawbacks

- Moderation Required: Including red wine and certain high-calorie foods require moderation to avoid potential health risks.
- Cultural Adaptation: Adapting the diet to different cultural preferences and food availability can be challenging.

Conclusion

Each popular diet comes with its own set of pros and cons. While some may work for certain individuals, there is no universal diet that suits everyone. The best approach to nutrition is one that is balanced, sustainable, and tailored to your unique needs and lifestyle. Before adopting any new diet, it is always wise to consult a healthcare professional or registered dietitian to ensure it is safe and appropriate for your health.

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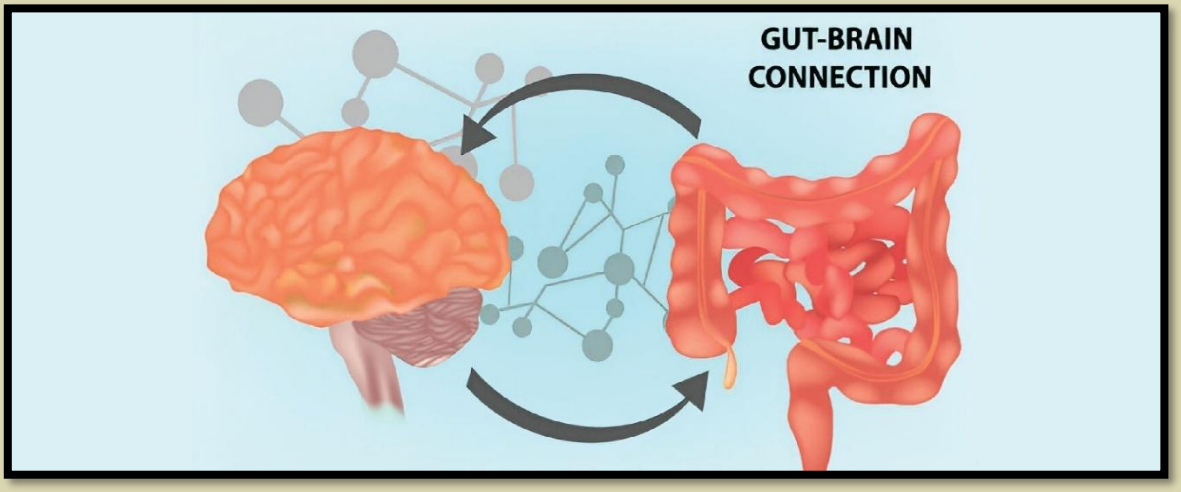
GUT AND BRAIN CONNECTION: THE HEALING POWER OF PROBIOTICS



Have you ever gone with your 'gut feelings' and felt butterflies in your stomach and nervousness or excitement in your brain? You probably must, because your gut also knows how to react as it has your second brain and work via a mechanism. The mechanism is highly dependent on the gut microbiome system of an individual that links digestion, mood, behavior, and even the way you think. The gut system consists of microbes that perform many functions, they are called probiotics. Probiotics are live microorganisms that when administered in sufficient amounts provide beneficial health benefits. They are called good bacteria as they improve the growth of healthy gut bacteria and maintain intestinal integrity.

But their role is not limited to this, they have a potential approach to managing the neurological and cognitive functions of the body as well. The question arises how do these microbes communicate and control the crucial functions of the body? According to recent studies, there is a bidirectional communication pathway known as the gut-brain connection (GBA – gut-brain axis). This communication allows the two organs the gut and the brain to communicate via several pathways that include humoral, immunological, endocrine, and neural pathways. The article provides a brief insight into the role and significance of probiotics in maintaining the gut-brain axis.

The gut-brain connection -

The communication between the major organs takes place via various pathways. The 2 are linked with biochemical signaling between the digestive system and the nervous system called as Enteric nervous system and the Central nervous system. The neurological pathways include the enteric nervous system (ENS), vagus nerves (VN), and gastrointestinal neurotransmitters. This ENS–CNS connection is highly impacted by gut microbiome activity. Dysbiosis or disturbed gut microbial integrity causes inflammation and release of cytokines which influence the axis. ENS is separated from the intestinal microbiota by a layer of mucous, by this the intestinal microbes do not have direct access but they communicate indirectly via the nervous system by transmitting the signals. Another possible way of communication pathway is the secretions of the intestinal bacteria and metabolites such as Short Chain Fatty Acids (SCFA), Lipopolysaccharides (LPS), etc, which can cross the intestinal cell and directly have an impact on ENS. As they reach their target cells they interact with certain receptors like G-protein coupled receptors to communicate in a better way. This bidirectional communication has many types of functions to be asses and control –

- Digestion
- Gut motility
- Metabolism
- Mood and behaviour
- Immunity
- Cognitive and emotional functions

Probiotics and gut health

Probiotics are the living, beneficial non-pathogenic bacteria or yeast that provide immense health benefits to the human body. The major group that comprises of gut microbiota are the lactobacillus and bifidobacterium species or saccharomyces boulardii. These bacteria need to be administered through the diet as they help in several physiological events that include

- Cell to cell signaling
- Reducing inflammation and preventing of pathogenic microbes and
- restoring the healthy gut microbiota
- Regulation of the immune responses
- Maintaining the pH of the intestines

Probiotics and Brain Connection

It's amazing how the gut microbiome can have a huge impact on mental health and development. Genetics, nutrition, and environment all play a role in brain function and development. Studies have demonstrated that gut bacteria can produce neuro-transmitters and neuromodulators including serotonin, gamma-aminobutyric acid, acetylcholine, norepinephrine, dopamine, and glutamate, which regulates the brain's activity via metabolic pathways and thus have an effect on the mental health.

Also, a separate group of probiotics which improve psychological and mental health and influence mood, anxiety, focus, and memory are called as Psychobiotics. Probiotics have a crucial role in reducing oxidative stress by producing antioxidant enzymes and chelating metal ions. This may also reduce the inflammatory state of the body and could enhance the blood-brain barrier integrity to improve neurological functions as a way to improve mental health.

Conclusion

The gut and the brain are in constant communication through the nerves and chemical signaling pathways. They feel each other and have an impact on the body functions as well. The exact role of probiotics in the gut-brain axis is still a matter of ongoing research. But the healthy bacteria not only support a healthier gut but also the healthier brain.

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Contributions from our future stars

From childhood days to growing tall,
Strong bones and health, she needs it all.
Calcium and iron, proteins to grow,
Fuel her dreams, let her glow!

In her teens, with changes near,
Vitamins and minerals keep her clear.
Energy high, her body in flow,
Healthy choices help her glow!

As she becomes a mother-to-be,
Folate, iron, omega-3!
For her and baby, nutrients are key,
A balanced diet is the recipe.

In later years, bones need care,
Calcium, Vitamin D: always there.
Bright and lively, healthy, just like before.
Good nutrition is what keeps her alive!

- Gayatri
- B.Sc. Sem V

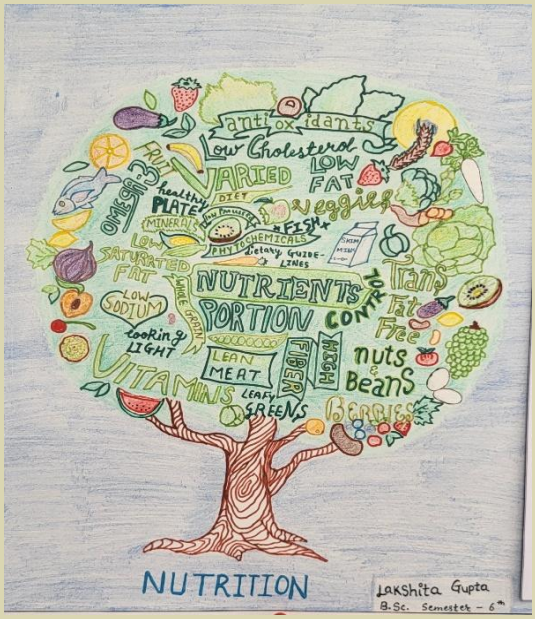
Healthy is wealthy, don't you know?
Fruits and nuts will make you glow!
Say no to junk, say yes to health,
Good food choices are true wealth!

Go green, stay lean,
Eat your veggies, keep it clean!
Healthy habits every day,
Strong and happy all the way!

Red and green, orange and blue,
Eat the rainbow, it's good for you!
Strong and happy, you'll feel great,
When you've got colors on your plate!"

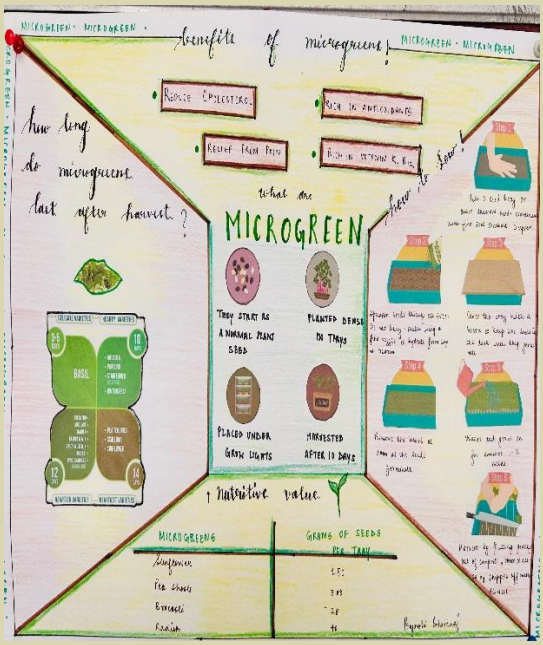
Fuel your body, fuel your mind,
With every bite, strength you'll find!
Whole grains, protein, veggies too,
Good nutrition will see you through!

- Aditi Gaba
- B.Sc. Sem V



By Lakshita Gupta, B.Sc. Sem 6

By Yashika Prajapati, B.Sc. Sem 5



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