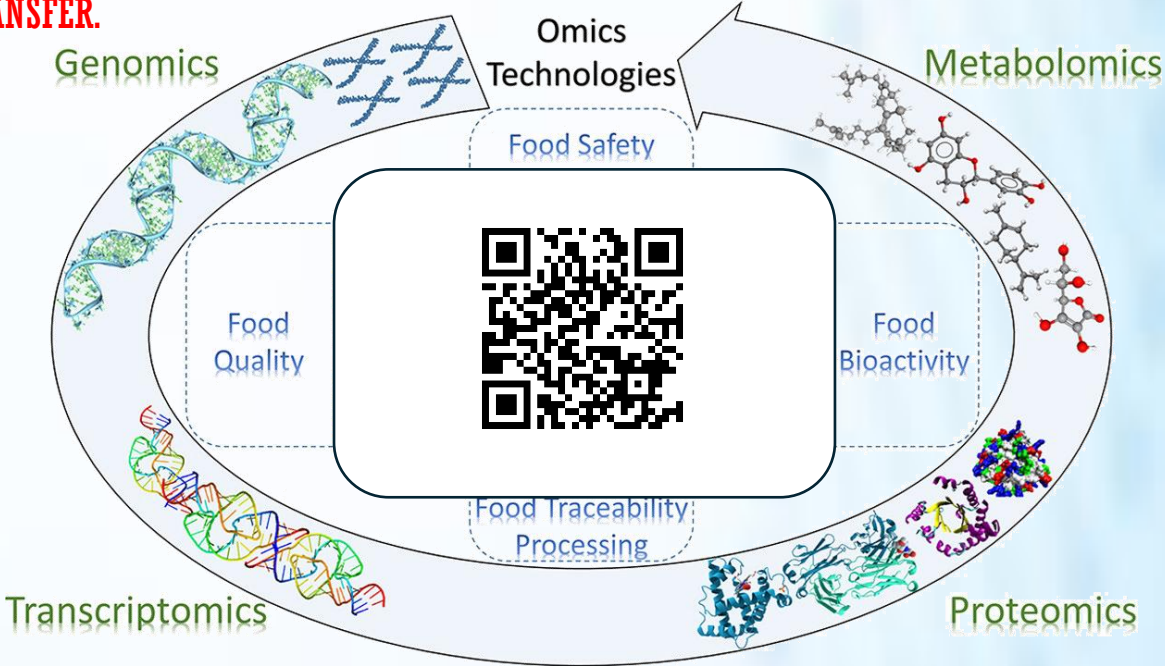




FUTURE PROJECT FOR SPIN-OFF A PERMANENT RESEARCH HUB TO ADVANCE COOPERATION BETWEEN ITALY AND AFRICAN COUNTRIES ON KEY AREAS SUCH AS SUSTAINABLE AGRICULTURE, HEALTH, PHARMACEUTICAL AND TECHNOLOGY TRANSFER.



SPIN-OFF IN FUTURE IN REFERENCE CUSTOMERS REQUEST, A INNOVATIVE RESEARCH HUB TO ADVANCE COOPERATION BETWEEN ITALY AND AFRICAN COUNTRIES ON KEY AREAS SUCH AS SUSTAINABLE AGRICULTURE, HEALTH, PHARMACEUTICAL AND TECHNOLOGY TRANSFER. PRECISION NUTRITION RESEARCH: CONDUCT STUDIES ON HOW DIFFERENT POPULATIONS, ESPECIALLY IN AFRICA, RESPOND TO VARIOUS DIETS, LIFESTYLE FACTORS, AND NUTRITIONAL INTERVENTIONS. FOCUS ON CHRONIC DISEASES LIKE OBESITY, DIABETES, CARDIOVASCULAR DISEASES, AND CANCER.

FOOD-OMICS Laboratory: Create a laboratory focused on genomics and nutrigenomics, studying how diet and nutrition influence gene expression and chronic disease risk.

- **Research Focus:** Sustainable growth strategies, agricultural innovation, precision nutrition, and food security.
- **Location:** Maybe in future will be a central hub within Africa, Mediterranean, England & Italy possibly in a country with significant agricultural output and strong medicinal plant resources.
- **Partnerships:** Collaborative research between Italian universities, African academic institutions, government agencies, and private sector partners.

Consultancy to sales equipment:

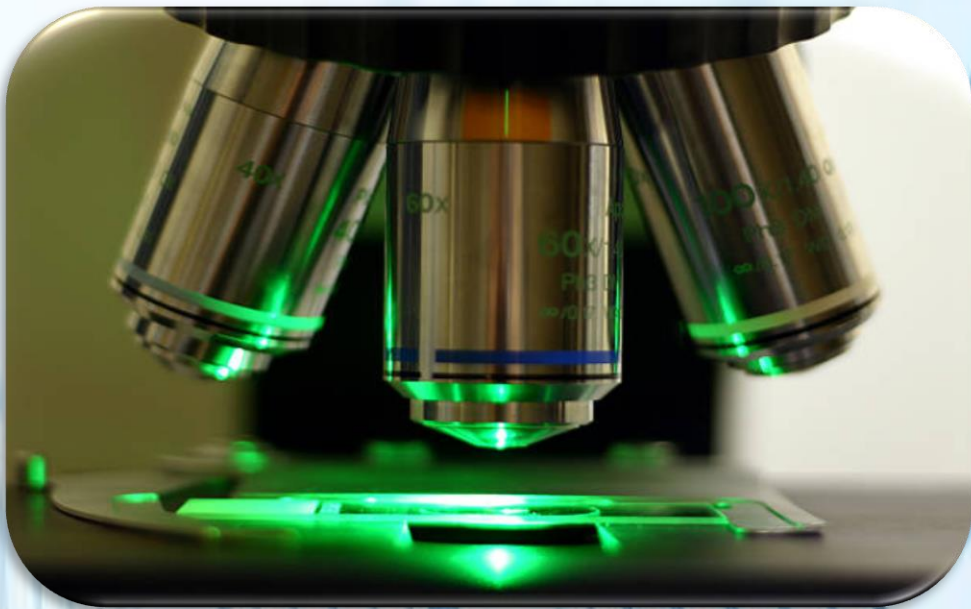
- **Research Teams:** Multidisciplinary teams to focus on specific areas such as sustainable agriculture, medicinal plant use, genomics, e-government applications, and health interventions.
- **Technology Transfer:** Facilitate the transfer of agricultural, healthcare, and technology innovations from Italy to Africa, particularly focusing on creating scalable models for sustainable food production, functional foods, and preventative health solutions.
- **Innovation and Knowledge Dissemination:** Work with local governments, businesses, and community organizations to transfer and disseminate knowledge related to supplement food development, agricultural sustainability, food safety and healthcare.



MILK QUALITY ANALYSIS KIT



FOOD-OMICS LABORATORY EQUIPMENT



MILK ANALYZER TEST KIT



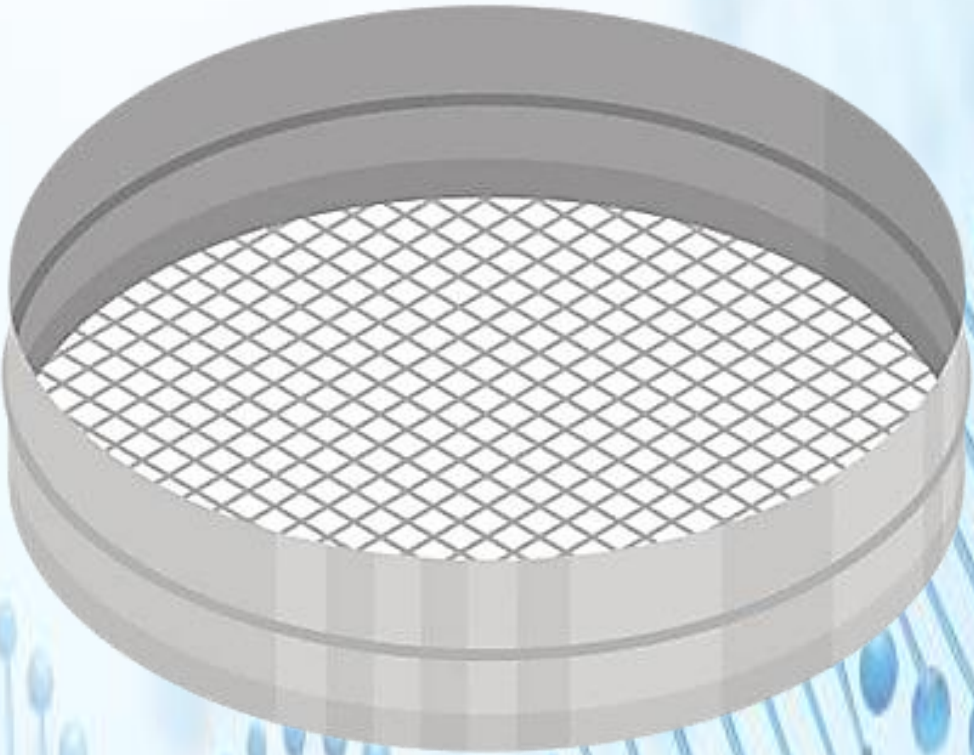
MILK ANALYSIS TEST

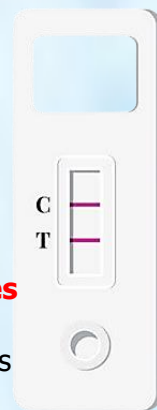
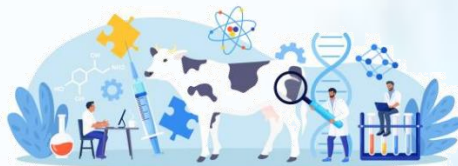
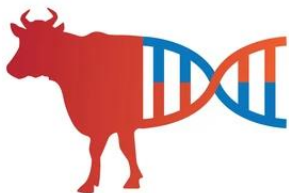


GRAIN ANALYZER MACHINE



GRAIN SORTING EQUIPMENT





Milk and Dairy Products Analysis Instrumentation Kits and Accessories

- Analyzers that use spectroscopy for rapid determination of the properties of milk and dairy products.
- An instrument used to determine the number of somatic cells in milk, indicative of milk quality and animal health.
- Devices used to measure the freezing point of milk, typically used for detecting adulteration.
- **ELISA Kit for Colostrum Detection in Milk, Calokit:** Kit for detecting the presence of colostrum in milk.
- **Kit for Bovine Serum Detection in Milk, Stick c-GMP:** Rapid kits to identify the presence of bovine serum in milk.
- **Alcohol Test for Milk, Reagents and Accessories:** Test for detecting the presence of alcohol in milk.
- **Alizarol Test for Milk, Reagents and Accessories:** Used for detecting adulteration in milk.

Food and Feed Analysis - Instrumentation

- **Digital Refractometers:** Instruments used to measure the refractive index, useful for determining sugar concentration and acidity in food and feed.
- **Automatic Titrators, Flash Food:** Instruments for automatic titration of food samples, used to determine acidity, pH, and other chemical properties.
- **Magnetic Stirrer :** Used for stirring food and feed samples during analysis.
- **Polarimeters :** Instruments used to measure the angle of rotation of polarized light, useful for analyzing starch content and other substances.

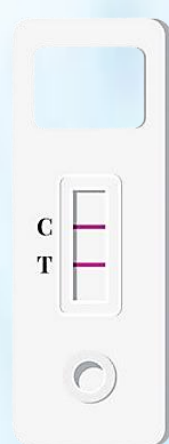
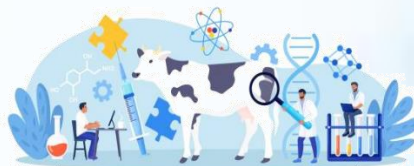
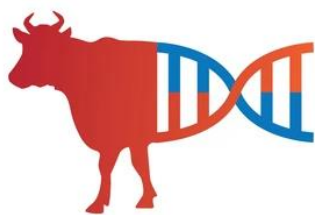
Food and Feed Analysis - Kits and Accessories

- **Enzymatic Kits:** Kits for analyzing starches, carbohydrates, and other components in raw materials and food products.
- **Mycotoxin Detection Kit:** Rapid kits for detecting mycotoxins in food and feed.

Oenological Analysis - Instrumentation

- Instruments for analyzing volatile acidity, alcohol, and other substances in wine samples.
- **Digital Refractometers** for determining acidity and other chemical characteristics in food-stuffs.
- **Used** for mixing wine samples during chemical analysis.





Oenological Analysis - Kits and Accessories

- **Sulphite Detection Kit for Wine:** Kit for detecting the presence of sulfur dioxide (SO₂) in wine.
- **ELISA Kit for Allergen Detection in Wine:** Kit for determining the presence of trace allergens such as milk or wheat proteins in wine.

Microbiology and Cell Cultures - Products and Instruments

- **Incubators**
- **Spectrophotometers** :for analyzing microorganisms and determining the concentration of biomolecules like proteins and nucleic acids.
- **Centrifuges** : Used to separate and concentrate cells in cell cultures or to process microbiological samples.

Sterilizers and Pasteurizers for Canned Food

- **Sterilizers and Pasteurizers for Canned Food:** Instruments for thermally treating canned food products, ensuring microbiological safety.

Sample Sampling and Transport

- **Sampling and Transport Packaging for Food Samples:** Accessories that ensure samples remain intact and in the appropriate condition during transport.

Temperature, pH, Conductivity Measurements, etc.

- **Portable Thermometers and pH Meters:** Instruments for measuring the temperature and pH of food and environmental samples.
- **Conductivity Meters:** Used to determine the electrical conductivity of solutions, useful for analyzing water quality and liquid food products.

Micropipettes, Dispensers and Multidispensers

- **Micropipettes:** Precision instruments for transferring small quantities of liquids.
- **Dispensers and Multidispensers:** Used for the automatic and precise distribution of liquid reagents in the laboratory.

Filtration and Microfiltration

- **Filtration Systems for Microbiological Analysis:** Systems for filtering microorganisms from food and water samples.
- **Microfiltration:** Technologies for treating food samples by removing particles and microorganisms.





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- **Analytical Balances:** Used for precisely weighing food samples and reagents.
- **Thermobalances:** Instruments for measuring weight changes in relation to temperature changes, useful in thermal analysis of samples.
- **Centrifuges:** Used to separate liquid or solid components in biological and chemical samples.
- **Centrifuge Rotors and Accessories:** Accessories used to customize the centrifugation process based on the samples.
- **Osmometers:** Instruments for measuring osmotic pressure, used in analyzing the quality of food and beverages.
- **HPLC (High-Performance Liquid Chromatography):** Used to separate and analyze chemical components in food and beverages.
- **Blotting Techniques** for transferring proteins or nucleic acids onto membranes for detecting specific molecules.
- **Chromatography:** Analytical techniques for separating and identifying compounds in food and environmental samples.

Technical Furniture, Chemical Hoods and Safety Cabinets

- **Laboratory Technical Furniture:** Furniture and structures for the laboratory, designed to ensure efficiency and safety.
- **Chemical Hoods:** For protection against fumes, vapors, and hazardous particles during chemical analysis.
- **Safety Cabinets:** For the safe storage of hazardous chemicals and reagents.

Plastics and Disposables

- **Laboratory Plastics (Test Tubes, Pipettes, Petri Dishes):** Disposable laboratory materials to avoid contamination in samples.

Miscellaneous Products - Environmental Analysis and Other Uses

- **Environmental Analysis Kits:** For monitoring air, water, and soil quality.
- **Other Laboratory Products:** Miscellaneous instruments and accessories for food, biological, and chemical research activities.







2. Supply & sales cutting-edge innovations, with a focus on healthcare, sustainable agriculture, and food security.

- **Innovation Showcase:** The “Future Active Showcase” could be a physical space that highlights real-world applications of technological innovations, such as precision agriculture tools, genomics-based nutrition solutions, food test and e-health platforms.
- **Demonstrations:** Exhibits and live demonstrations of how new technologies, practices, and research outcomes can be applied in real-world settings. This could include smart farming techniques, mobile health solutions, and AI-driven predictive healthcare tools.
- **International Collaboration:** Bring together international research institutions, technology companies, and local partners to demonstrate best practices in sustainable growth, agriculture, and healthcare.
- **Incubator Model:** Act as an incubator for new ventures related to sustainability, food systems, and healthcare. Support for startups could include funding, mentoring, and access to research facilities.





3. Precision Nutrition Center & FOOD-OMICS Laboratory

Future goal: Establish a cutting-edge facility to conduct population-based research on nutrition and genomics to predict and prevent chronic diseases, particularly in women of childbearing age.

Key Features:

- **Target Group:** Special emphasis on women of childbearing age, addressing the nutritional needs and health risks for mothers and children, including the prevention of malnutrition, anemia, and pregnancy-related complications.
- **Functional Foods & Nutraceuticals:** Develop functional foods and supplements based on local African food resources, medicinal herbs, and agro-industrial waste, promoting health and disease prevention.
- **Research and Development:** Develop and test food-based interventions, including functional foods, probiotics, and nutraceuticals. Focus on leveraging local plants and vegetables for their bioactive compounds and nutritional properties.
- **Partnerships with Local Farmers:** Work with local farmers to produce functional foods and ensure they have a reliable market. Introduce sustainable farming practices that improve food security while promoting health.
- **Women's Health Focus:** Design research programs tailored to the specific nutritional needs of women, particularly those in rural or underserved regions, with the aim of reducing maternal and child mortality rates.
- **Educational Programs:** Offer training for healthcare professionals, researchers, and local farmers on nutrition, functional foods, and food safety.





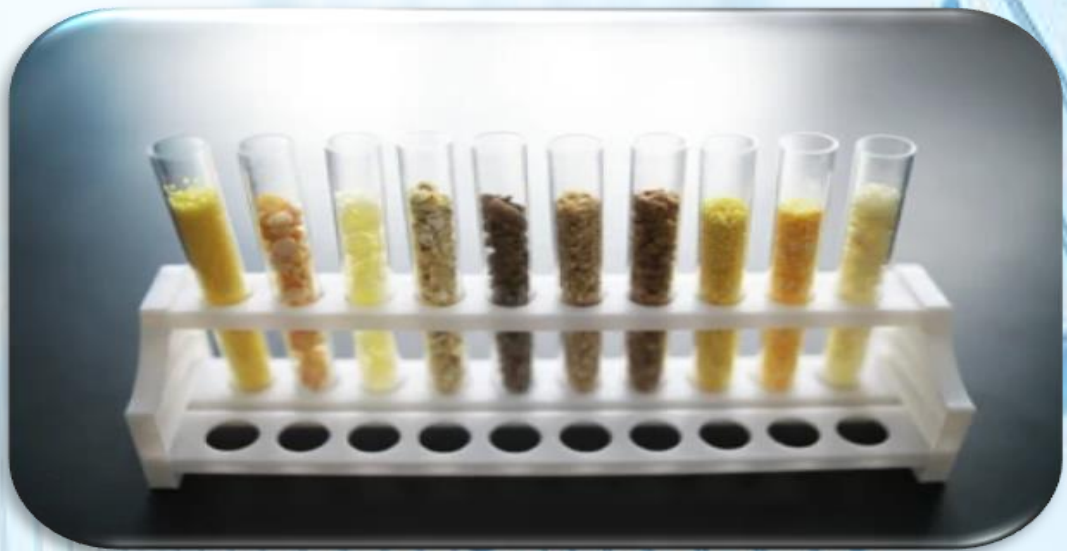
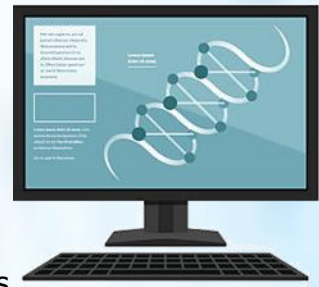
4. Industrial Production and Use for Health Purposes

Objective: Facilitate the large-scale production of functional foods, nutraceuticals, and health supplements derived from local food resources and agro-industrial waste.

- **Industrial Production:** Develop a production facility that turns local food resources into commercially viable health products, such as nutraceuticals, food supplements, and natural remedies.
- **Sustainable Practices:** Focus on using "waste" materials from the agricultural sector to create value-added products such as plant-based supplements, bioactive compounds, or functional food ingredients.
- **Market Linkages:** Build connections with both local and international markets for these products, including export opportunities.

Operational Elements:

- **Research to Production:** Set up pilot programs to take research findings (e.g., new nutraceuticals or functional food products) from lab to market, ensuring scalability and sustainability.
- **Quality Control & Certification:** Create a lab to monitor food safety and quality control for new products. Certification of products according to international standards (e.g., ISO) will be crucial for export.
- **Regulatory Collaboration:** Work with local regulatory bodies to ensure that products meet safety and quality standards.

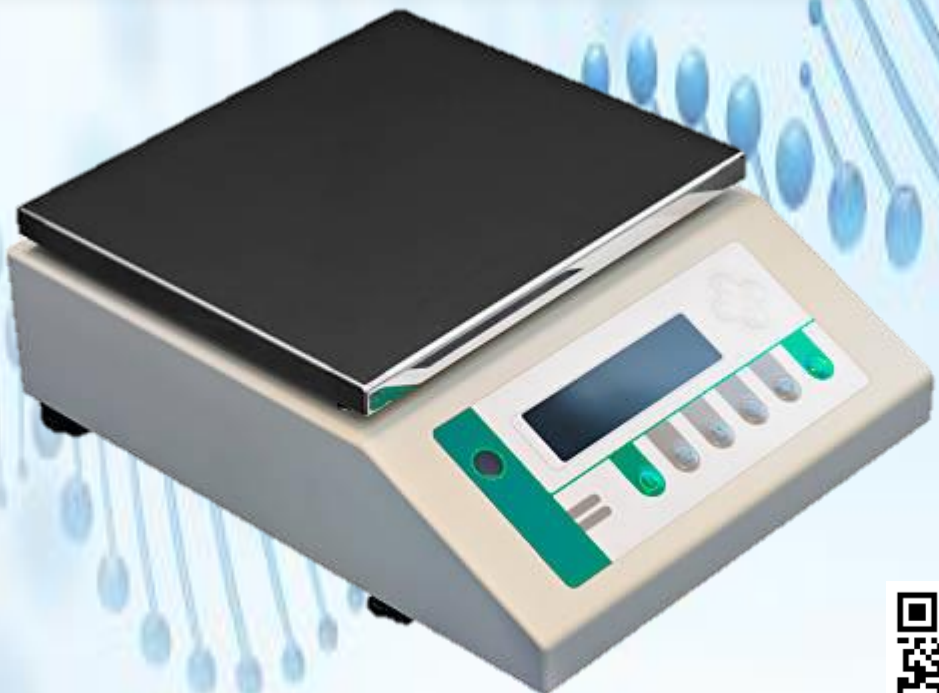


5. Technology Transfer & Scientific Dissemination

Objective: Facilitate the transfer of agricultural, health, and food safety technologies and knowledge from Italy to Africa, ensuring sustainability and long-term benefits for local communities.

Operational Elements:

- **Collaborative Research Programs:** Set up joint research programs focused on sustainable agriculture, healthcare, and food systems innovation that engage both Italian and African companies.
- **Scientific Dissemination:** Regularly publish findings and innovations through scientific journals, conferences, and digital platforms to ensure that knowledge is shared widely.



6. Sustainable Development Models & Business Incubators

Objective: Create sustainable business models and incubators that promote local entrepreneurship in agriculture, health, and food systems.

Key Features:

- **Business Incubators:** Support the growth of start-ups and small businesses focused on agricultural innovation, food production, health technologies, and sustainable business practices. This could include incubators for women and youth entrepreneurs.
- **Sustainable Business Models:** Promote businesses that use local resources sustainably, reduce food waste, and provide solutions for food security and public health.
- **Agro and Non-Agro Sectors:** Foster innovation in both traditional agricultural products and emerging food technologies, such as plant-based proteins and lab-grown foods.

Operational Elements:

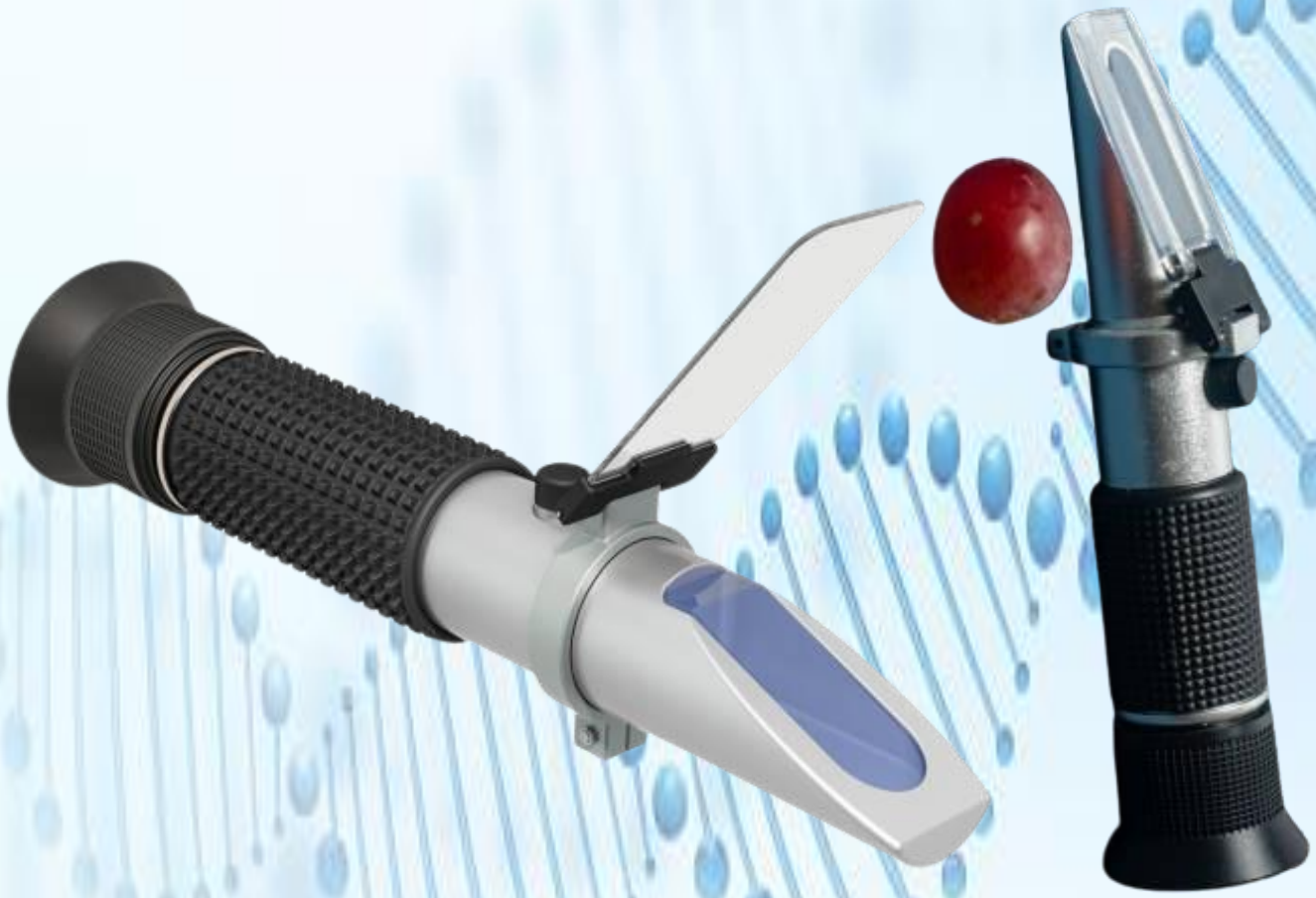
- **Local Economic Impact:** Ensure that these businesses are embedded in the local community, with a focus on creating jobs, fostering sustainable practices, and improving local economies.

1. Laboratory Equipment for Sample Preparation and Handling

These are essential for preparing food samples, biological samples, and other materials for analysis.

- **Autoclaves** – For sterilizing equipment and materials, ensuring the laboratory maintains a contamination-free environment.
- **Centrifuges** – For separating different components in food or biological samples based on their density (e.g., fat, water, protein).
- **Homogenizers** – Used to blend food samples into uniform mixtures, especially for analyzing bioactive compounds.
- **Shakers and Mixers** – For mixing solutions or samples evenly.
- **Freeze Dryers (Lyophilizer)** – To dehydrate food samples by freezing them and then removing the moisture via sublimation, preserving their nutrients and structure.
- **Vortex Mixers** – To quickly mix small quantities of liquids.
- **Sonicators (Ultrasonic Cleaners)**
- **Glassware & Pipettes** – Essential for precise measurement and handling of liquids and small sample volumes.





2. Analytical Chemistry Equipment

These instruments are used to analyze the chemical composition of food, identifying bioactive compounds, nutrients, and contaminants.

3. Genomics and Molecular Biology Equipment These are used for studying the genetic components of food, and how food components interact with the human genome.

- **Polymerase Chain Reaction (PCR) Machine** – For amplifying DNA samples to study gene expression, mutations, or microbiome compositions.
- **Real-Time PCR (qPCR)** – A more advanced PCR that allows for quantitative measurement of gene expression in response to dietary interventions or chronic diseases.
- genetic variation of food crops or medicinal plants.
- **Bioanalyzer** – For assessing the quality and concentration of RNA, DNA, or proteins extracted from food or biological samples.

Microarray Technology – For studying gene expression patterns and identifying genetic markers associated with chronic diseases related to diet and nutrition. **Inertsil ODS-3V/250** is a type of high-performance liquid chromatography (HPLC) column that is commonly used in analytical chemistry for separating a wide variety of compounds. In a **Food-Omics Laboratory**, such a column could be applied for a variety of purposes related to food analysis, including the determination of chemical composition, contamination, and other quality control measures in food products.

Inertsil ODS-3V/250 could be applied in a Food-Omics Laboratory:

1. Analysis of Food Components

- **Separation of organic compounds:** The ODS-3V is designed for the separation of a wide range of food constituents, including amino acids, peptides, vitamins, polyphenols, flavors, and sugars. It can be used to identify and quantify these compounds in various food matrices.
- **Extraction of bioactive compounds:** Many bioactive compounds such as antioxidants, carotenoids, polyphenols, and phytochemicals can be extracted and analyzed using this HPLC column, which helps in studying their effects on health and nutritional value.



2. Detection of Contaminants

- **Mycotoxins and Pesticides:** The column can be used for the detection of contaminants like mycotoxins (aflatoxins, ochratoxins, etc.) and pesticide residues in food and feed. HPLC with Inertsil ODS columns is a common technique for ensuring food safety.
- **Heavy metals and industrial chemicals:** It could be applied in combination with other techniques (e.g., post-column derivatization) to analyze organic pollutants, including certain heavy metals or other chemical residues that might contaminate food during production or packaging.

3. Food Additives and Preservatives

- **Analysis of additives:** The Inertsil ODS-3V column is effective for separating and quantifying food additives like artificial sweeteners, preservatives (e.g., sulfites, nitrates), and colorants (e.g., synthetic dyes). These are commonly tested in processed foods for compliance with safety regulations.
- **Analysis of flavor compounds:** This column can be used to study volatile flavor components in food, such as esters, aldehydes, ketones, and alcohols, which are important for determining the sensory qualities of food products.

4. Nutritional Profiling

- **Vitamin and nutrient analysis:** The ODS-3V column can be used in the separation and quantification of vitamins (e.g., vitamin C, vitamin E, B-vitamins), which are essential for determining the nutritional value of food products.
- **Fatty acid profiling:** Analysis of fatty acids (saturated, unsaturated, trans fats) in foods like oils, dairy products, and meats can be done using HPLC with Inertsil ODS columns. This is useful for both nutritional labeling and ensuring product quality.

5. Proteomics and Peptidomics

- **Protein and peptide analysis:** In food-omics, the Inertsil ODS-3V column can be used for the separation and identification of proteins and peptides in complex food matrices, such as dairy, meat, and plant-based foods. This is particularly relevant for analyzing allergens or for proteomic studies in food quality control.





6. Authentication and Adulteration Detection

- **Food authenticity:** The column could be used in food authentication, helping to detect adulteration or mislabeling in products like olive oil, honey, or milk. For instance, the profile of fatty acids, sugars, or proteins could reveal if a product is adulterated with cheaper alternatives.
- **Detection of animal or plant species:** Using HPLC, along with other methods like mass spectrometry (MS), the Inertsil ODS-3V column can assist in identifying animal or plant species in food, which is useful for verifying food sources, such as detecting meat fraud or identifying specific plant-based ingredients.

7. Flavor and Aroma Analysis

- **Flavors and fragrance profiling:** The Inertsil ODS-3V column can be particularly useful for analyzing complex flavor profiles in beverages, baked goods, dairy products, and other foods. It can separate volatile compounds, allowing researchers to identify and quantify aromas in food products.
- **Quality control in processed foods:** By monitoring changes in flavor compounds, the Inertsil ODS-3V can help ensure that food products maintain a consistent taste and aroma during production.

8. Advanced Metabolomics and Food-omics Studies

- **Metabolite profiling:** In food-omics research, this column can be used to separate metabolites and other small molecules to create detailed metabolic profiles of food products. These profiles are crucial for understanding the effects of food on human health, aging, or disease prevention.
- **Lipidomics:** As part of lipidomics studies, the Inertsil ODS-3V can separate lipids and fatty acids in food, helping to identify fats in dairy products, oils, and processed food.

9. Regulatory Compliance and Labeling

- **Compliance testing:** Food products are often required to meet specific standards for ingredients, contaminants, and nutrients. The Inertsil ODS-3V column is a powerful tool for ensuring compliance with regulations by detecting and quantifying relevant substances in food.
- **Nutritional labeling:** Inertsil ODS-3V can be used to test for the levels of nutrients like proteins, sugars, fats, and other key ingredients, which are necessary for accurate nutritional labeling.

Key Benefits in a Food-Omics Lab:



- **High resolution:** Provides excellent separation, making it suitable for complex food matrices.
- **Wide range of applications:** From quality control to cutting-edge food research, it can address diverse analytical needs.
- **Robust and reliable:** The ODS-3V phase is known for its stability and reproducibility, making it ideal for the rigorous demands of food testing.

4. Microbiome Analysis Equipment

Since the microbiome plays a crucial role in human nutrition and health, specialized equipment for studying microbial communities is essential.

- **PCR-based Microbiome Profiling Kits** – For analyzing gut or food microbiota DNA.

5. Food Safety and Toxicology Equipment

Food safety testing is critical in evaluating the impact of food consumption on health, especially for contaminants or bioactive substances that could be harmful.



6. Metabolomics and Nutrigenomics Equipment

This equipment is key for understanding the biochemical interactions between food and human metabolism, particularly for chronic disease prevention and personalized nutrition.

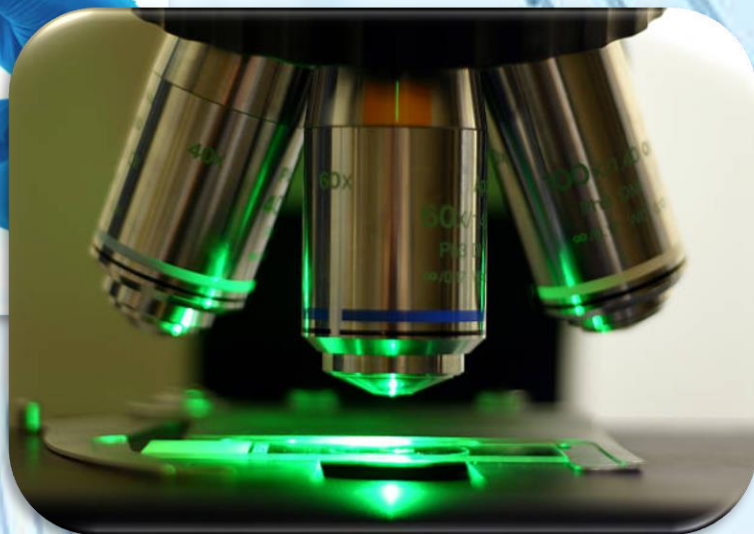
7. Environmental and Ergonomic Equipment

This includes equipment for maintaining a safe and efficient laboratory environment.

- **Temperature-Controlled Storage (Freezers and Fridges)** – To store samples, especially food or biological specimens that are sensitive to temperature changes.

8. Other Supporting Equipment

- **3D printer** – For creating tissue models or food structures that mimic real biological tissues or are used for studying food interactions at the molecular level.
- **Optical Microscopes & Fluorescence Microscopes** – For visualizing food components, microbial cells, or tissues at high magnification.









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