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Isolation Of Synbiotics From Fermented Millets

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Abstract : Millets are a group of small-seeded grasses that are cultivated as cereal crops, primarily in Asia and Africa. They are known for their resilience and ability to grow in harsh, arid environments.This study is to emphasis the isolation of the synbiotics from fermented millet

Introduction

Millets are a group of small-seeded grasses that are cultivated as cereal crops, primarily in Asia and Africa. They are known for their resilience and ability to grow in harsh, arid environments. Synbiotics, which combine probiotics (beneficial bacteria) and prebiotics (food for these bacteria), play a significant role in enhancing gut health and overall well-being. When paired with millets, the benefits are even more pronounced.

Types of Millets

Pearl Millet (Bajra): Widely grown in India and Africa, known for its high iron content.
Finger Millet (Ragi): Rich in calcium and commonly used in South Indian cuisine.
Foxtail Millet (Kangni): Contains high levels of dietary fiber and is often used in porridges.
Proso Millet (Chena): Known for its quick growth cycle and high protein content.
Barnyard Millet (Sanwa): Low in calories and high in fiber, making it a popular choice for weight management.
Kodo Millet (Kodra): Rich in antioxidants and beneficial for managing diabetes.

Nutritional Benefits

Rich in Nutrients: Millets are packed with essential nutrients like vitamins, minerals, and antioxidants.High in Fiber: They are an excellent source of dietary fiber, which aids in digestion and helps maintain a healthy gut.Gluten-Free: Millets are naturally gluten-free, making them suitable for people with celiac disease or gluten intolerance.Low Glycemic Index: They have a low glycemic index, which helps in managing blood sugar levels.

Health Benefits

Heart Health: The high fiber content in millets helps reduce cholesterol levels and supports heart health.

Diabetes Management: Millets' low glycemic index helps in controlling blood sugar levels.
Weight Management: Being low in calories and high in fiber, millets can aid in weight loss and management.
Bone Health: Finger millet, in particular, is rich in calcium, which is essential for strong bones.
Synbiotics, which combine probiotics (beneficial bacteria) and prebiotics (food for these bacteria), play a significant role in enhancing gut health and overall well-being. When paired with millets, the benefits are even more pronounced.

Importance of Synbiotics

Gut Health: Synbiotics help maintain a healthy balance of gut microbiota, which is crucial for digestion and immune function.
Enhanced Nutrient Absorption: They improve the absorption of essential nutrients, including vitamins and minerals.
Immune Support: Synbiotics boost the immune system by enhancing the gut's barrier function and promoting the production of beneficial compounds like short-chain fatty acids.

Anti-inflammatory Effects: They help reduce inflammation in the gut, which can prevent various gastrointestinal disorders.

Health Benefits of Combining Millets and Synbiotics

Improved Digestion: This combination enhances digestive health by promoting a healthy gut microbiome.Enhanced Immunity: The synergistic effect of millets and probiotics boosts the immune system, helping the body fight off infections.

Objectives

- Random sampling sorghum millets from various geographical areas
- Isolation of lactobacillus from the millet fermentation water based
- Biochemical characterization of the isolates found from the millet fermentation

Methods

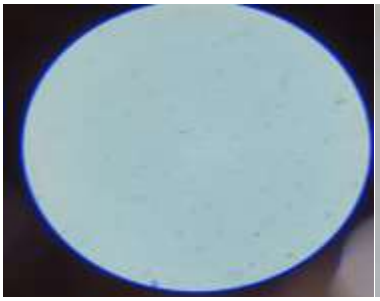
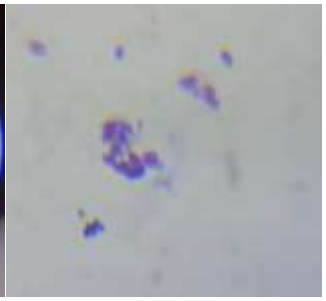
- Random sampling of two types sorghum millets were pre soaked then grinded and kept at 37 for fermentation 24 hours
- Suspension sample diluted sterile saline under aseptic condition and then streaked on MRS and Nutrient agar incubation at 37 degree for 24hours
- Two isolates were found which were further subjected to biochemical characterization and colony characterization

Results

Two types of sorghum millet 1st Mumbai 2nd is from Rajasthan

Pre soaking sorghum millet after fermentation 12 and 24 hours

NUTRIENT AGAR **MRS AGAR**

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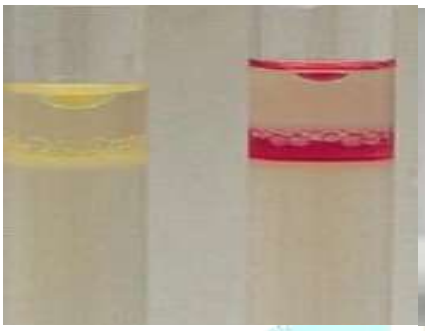
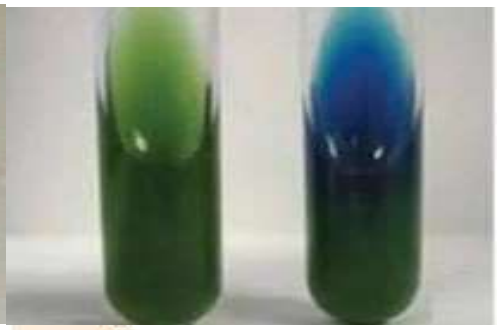

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biochemical test

Test	Smr1	Smr2
Capsule	Negative	Ngeative
Catalase	Negative	Negative
Citrate	Negative	negative
Flagella	Negative	Negative
Gas	Negative	Negative
Gelation hydrolysis	Negative	Negative
Gram staining	Gram positive short rods	Gram positive cocci
H_2s production	Negative	Negative
Indole	Negative	Negative
Fructose	Positive	Positive
Lactose	Positive	Positive
Salicin	Positive	Positive
Starch	Positive	Positive
Sucrose	Positive	Positive

Colony Characterization

Colony characterization	SMRIs1	SMRIs2
Shape	Round	Short
Size	Ovoid	small
Texture	smooth	Sticky mucus
Color	White creamy	Slight yellow
Eveation	convex	flat
Edge	entire	entire
Gram nature	Grampositive short rods	Gram positive cocci

Conclusion :This study is to isolate synbiotics including lactobacillus species from the fermented millet flour .following health benefits regarding millets have been also discussed. from the above mentioned biochemical test and colony characteriztaion it was found to show synbiotics from the fermented millet flour these may be further confirmed by phenotypical characterization

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