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Review Article

Saccharomyces boulardii: An Efficient Yeast Probiotic for Pediatric Gut Dysbiosis Management

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Abstract

The human microbiome, comprising diverse microorganisms across body surfaces, profoundly influences host physiology, metabolism, and nutrition. Dysbiosis, an imbalance within gut microbiota, triggers health issues such as inflammation, autoimmune disorders, and obesity. Probiotics, which are live microorganisms known for their health benefits, when used correctly, hold promise for managing dysbiosis. Prebiotics, probiotics, synbiotics, and immunobiotics have demonstrated efficacy in addressing gut dysbiosis. Among these supplements, yeast-based probiotics such as *Saccharomyces boulardii* CNCM I-745 demonstrate significant benefits over bacterial alternatives.

Yeast cells, being larger and more resistant to digestive enzymes and bile than bacterial cells, serve as a barrier against pathogens and possess immunomodulatory properties, enhancing gut health. *S. boulardii* CNCM I-745, with its unique features such as pathogen binding, immune stimulation, and toxin neutralization without genetic transfer, notably mitigates antibiotic resistance risk. It effectively prevents antibiotic-associated diarrhea and pediatric acute gastroenteritis compared to bacterial probiotics, endorsed by the international guidelines for managing acute diarrhea safely. In addition, oral probiotics may aid microbiota restoration and potentially prevent other diseases.

Key words: Dysbiosis, Gut health, Microbiome, Probiotics, *Saccharomyces boulardii* CNCM I-745

INTRODUCTION

Gut microbiota has a pivotal role to play in gut development, maturation, and differentiation of the immune system. The imbalance in the gut microbial equilibrium is referred to as dysbiosis, which can potentially lead to chronic health conditions such as gastrointestinal disease such as mucosal inflammation, cardiovascular disease, immune dysfunction, and other childhood disorders.[1-3] The initial 1000 days after birth are vital for developing the infant's gut microbiota and immune system. During this period, diet and environment play an important role in developing gut microbiota. It is known that antibiotics disrupt both harmful and beneficial gut bacteria, leading to dysbiosis; however, their precise impact on the infant gut microbiota is still not fully understood.[3,4] Adopting a diet, supplementing with probiotics and prebiotics, and breastfeeding are all crucial for maintaining a diverse gut microbiota.[4]

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THE POTENTIAL OF PROBIOTICS FOR THE MANAGEMENT OF GUT DYSBIOSIS

Gut dysbiosis in children can lead to short-term gastrointestinal problems such as constipation, diarrhea, and bloating. Long-term consequences include disruptions in the gut barrier and imbalances in the host's immune and metabolic systems. Moreover, antibiotics can impact both harmful and beneficial gut bacteria, potentially exacerbating or initiating issues related to gut dysbiosis.[3,4] Increasing evidence indicates that probiotics show potential as an intervention for addressing dysbiosis.[1]

The Food and Agriculture Organization of the United Nations and the World Health Organization jointly

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define probiotics (a Greek term meaning "for life") as "live microorganisms, which, when administered in adequate amounts, confer a health benefit on the host."[5,6] Although probiotics offer potential benefits, more research is needed due to controversy over various strains, lack of consensus, and limited studies.[1,7]

YEAST AND BACTERIAL PROBIOTICS: CONTRASTING BENEFITS IN GUT HEALTH

To address gut dysbiosis, interventions such as prebiotics, probiotics, synbiotics, and immunobiotics are employed.[5,8] Prebiotics, probiotics, and synbiotics function by enhancing gastrointestinal health and enhancing survival and adherence to live microbial dietary supplements in the gastrointestinal tract.[6] Bacterial probiotics such as *Lactobacillus rhamnosus*, *Bacillus clausii*, and *Lactobacillus* are effective in managing dysbiosis; however, yeast probiotics are significantly more beneficial than bacterial probiotics.[9,10]

Yeast cell has a larger size (10 μm) than bacteria (1 μm), enabling them to act as a steric hindrance against pathogenic bacteria. This characteristic enhances their potential as better probiotic candidates. Probiotic yeast demonstrates enhanced viability within the stomach environment, enduring the presence of digestive enzymes, bile, and gastrointestinal juices better than probiotic bacteria, thereby providing yeast cells with a competitive advantage. In addition, yeast cells harbor numerous immunomodulatory components within their structure [Table 1].[11,13]

ADVANTAGE OF *SACCHAROMYCES BOULARDII* CNCM I-745 AS A PROBIOTIC IN MANAGING GUT DYSBIOSIS

S. boulardii CNCM I-745, a yeast probiotic, uniquely rebalances gut microbiota without transmitting antibiotic-resistant genes. Its mechanisms include pathogen-binding and immunological responses, proving highly effective in preventing antibiotic-associated diarrhea (AAD) and reducing diarrhea duration in pediatric acute gastroenteritis (PAGE).[11,14] The key findings regarding the efficacy and safety of *S. boulardii* CNCM I-745 in pediatric diarrhea are outlined in Table 2.[15-18]

In addition, due to its proven efficacy and safety, it is recommended by the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition and other global bodies for both the prevention and treatment of acute diarrhea. Consequently, *S. boulardii* CNCM I-745 emerges as a preferred probiotic choice for managing AAD and PAGE, offering distinct advantages over bacterial probiotics alongside a favorable efficacy and safety profile [Box 1].[11,14]

INFLUENCE OF PROBIOTICS ON THE *FIRMICUTES/BACTEROIDETES* (F/B) RATIO

The recent focus on gut bacteria, particularly *Firmicutes* and *Bacteroidetes*, highlights their crucial role in intestinal balance, reflected in the F/B ratio. Dysbiosis, linked to various diseases, underscores the significance of this ratio. Probiotics containing live microorganisms offer diverse health benefits by influencing the F/B ratio, potentially viable in the prevention of diseases. *Lactobacillus* species are extensively studied for their potential to modify this ratio and address these health conditions.[19]

CONCLUSION

Understanding and addressing dysbiosis are crucial as the gut microbiome plays a critical role in maintaining overall health and the body's immunity. Antibiotics disrupt the gut microbiome while probiotics such as *S. boulardii* CNCM I-745 offer promising health outcomes. Its distinctive properties, such as pathogen-binding and immunological responses, make it effective without transferring antibiotic-resistant genes. It is also endorsed by global guidelines for its effectiveness in preventing AAD and reducing diarrhea duration in children. Despite challenges such as strain

Table 1: Difference between bacteria and yeast and its implication on probiotics[11,12]

Characteristics	Yeast	Bacteria
Cell size	10 μm	1 μm
Cell wall	Chitin, mannose (phosphopeptidomannan, phospholipomannan), glucan	Peptidoglycan, lipopolysaccharide (Gram-negative), lipoteichoic acid (Gram-positive)
Optimal growth conditions:		
pH	4.5–6.5	6.5–7.5
Temperature (°C)	20–30	10–80
Resistance to antibiotics	Yes	No
Transmission of genetic material	No	Bacteria can transfer the resistance genes to pathogenic bacteria, leading to antibiotic resistance.
Autoaggregation	Yeast strains can self-aggregate and produce flocs.	Limited aggregation

Table 2: Effectiveness of *S. boulardii* CNCM I-745 in pediatric diarrhea: Summary of key findings

Clinical study	Study population and design	The outcome of the study	Conclusion
Bin *et al*.[15]	A total of 194 *H. pylori*-positive children were included in the study and were randomized into two groups. Both groups received triple therapy for penicillin allergy for 2 weeks. The treatment group (*n*=102) received *S. boulardii* in addition to triple therapy, while the control group (*n*=92) received only triple therapy.	In the treatment group, diarrhea occurred in 12 cases, starting after 6.25±1.24 days, and lasting 3.17±1.08 days, with 100% compliance to eradication treatment. In the control group, diarrhea occurred in 26 cases, starting after 4.05±1.11 days, and lasting 4.02±0.87 days.	*S. boulardii* demonstrates a beneficial effect in preventing and treating diarrhea during *H. pylori* eradication in children.
Dinleyici *et al*.[16]	The impact of *S. boulardii* CNCM I-745 was evaluated in a total of 363 children with acute watery diarrhea in a multicenter, randomized prospective, controlled, single-blind clinical trial.	*S. boulardii* group experienced approximately 24 h shorter duration of diarrhea compared to the control group (75.4±33.1 vs. 99.8±32.5 h, *P*<0.001). No adverse effects related to the probiotic were observed.	*S. boulardii* CNCM I-745 adjunctive to oral rehydration solution significantly reduces diarrhea duration, and length of hospital and emergency care unit stay.
Ragavan *et al*.[17]	A multicenter retrospective study of medical records of 160 children treated for acute diarrhea was conducted. Routine treatment was done with oral rehydration solution and zinc, with or without *S. boulardii.*	The group receiving *S. boulardii* experienced a shorter median duration of post-treatment diarrhea (3 vs. 4 days), reduced stool frequency (1.7 vs. 2.5 stools), and notable weight gain (300 g vs. mean loss of 400 g) compared to the non-*S. boulardii* group.	*S. boulardii* was found to be effective in treating diarrheal diseases in children with dehydration.
Mourey *et al*.[18]	100 infants and children aged 3–36 months with acute diarrhea received either *S. boulardii* CNCM I-3799 (5 billion CFU twice daily) or a placebo for 5 days, followed by extended follow-up.	*S. boulardii* CNCM I-3799 administration led to shorter duration and severity of diarrhea. Time to recovery was significantly shorter in the probiotic group compared to placebo (65.8±12 vs. 95.3±17.6 h, *P*=0.0001).	*S. boulardii* CNCM I-3799 supplementation effectively reduced the duration and severity of acute diarrhea in infants and children.

S. boulardii: Saccharomyces boulardii, H. pylori: Helicobacter pylori

diversity and limited studies, ongoing research on probiotics and interventions is vital for managing gut dysbiosis and enhancing gastrointestinal health.

ACKNOWLEDGMENT

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EXPERT OPINION

1. Is yeast probiotic being significantly more beneficial than bacterial probiotic?
   Around 98% of the doctors agree that yeast probiotics are significantly more beneficial than bacterial probiotics [Figure 1].
2. What is your perspective on whether *S. boulardii* CNCM I-745 is a yeast or bacterial probiotic and its potential to transmit antibiotic-resistant genes?
   All the doctors had unanimous agreement that *S. boulardii* CNCM I-745 is a yeast probiotic and they concur that this strain does not possess the capability to transmit antibiotic-resistant genes.
3. What is your perspective on whether *S. boulardii* is more effective in reducing the average duration of diarrhea compared to bacterial probiotics?
   The majority (98%) of doctors agreed that *S. boulardii* reduces the mean duration of diarrhea as compared to bacterial probiotics [Figure 2].
4. What is your perspective on whether *S. boulardii* can be taken with antibiotics, and whether it can reduce the risk of antibiotic gene transmission, and impact gut microbial biodiversity and compliance with antibiotic treatment?
   Around 87% of doctors agree that *S. boulardii* can be safely taken with antibiotics. In addition, 5% acknowledge its compatibility with antibiotic treatment, 4% emphasize its role in reducing the risk of antibiotic gene transmission, and another 4% highlight its ability to preserve gut microbial diversity [Figure 3].
5. According to you, do changes in F/B ratio indicate dysbiosis, diarrhea, constipation, or inflammatory bowel disease?
   Approximately 75% of doctors reported that changes in the F/B ratio indicate inflammatory bowel disease (IBD). In addition, 17% noted it indicates dysbiosis

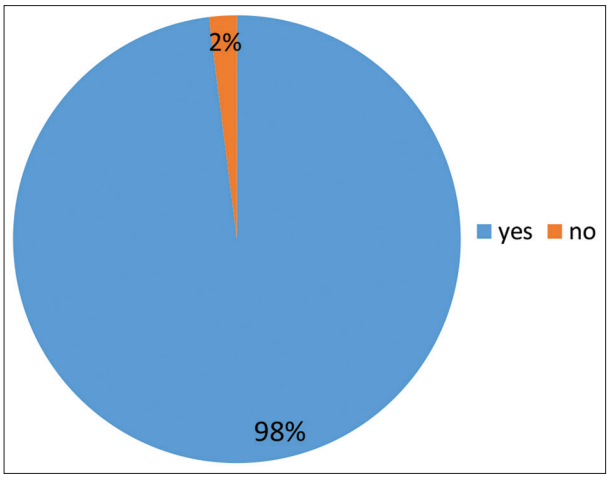

Figure 1: Benefits of yeast and bacterial probiotics

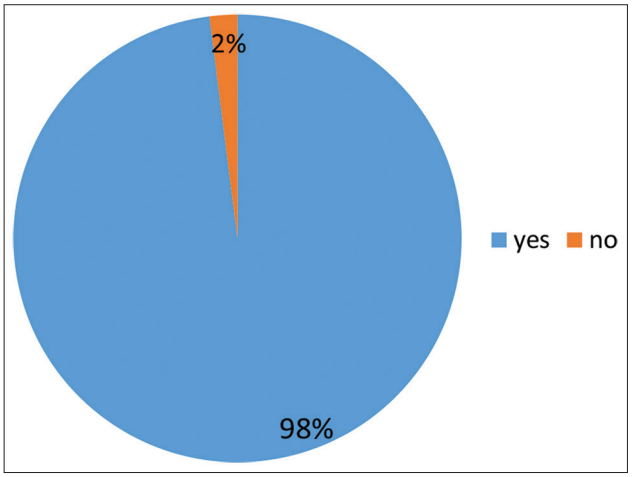

Figure 2: *Saccharomyces boulardii* reduces the average duration of diarrhea more effectively than bacterial probiotics

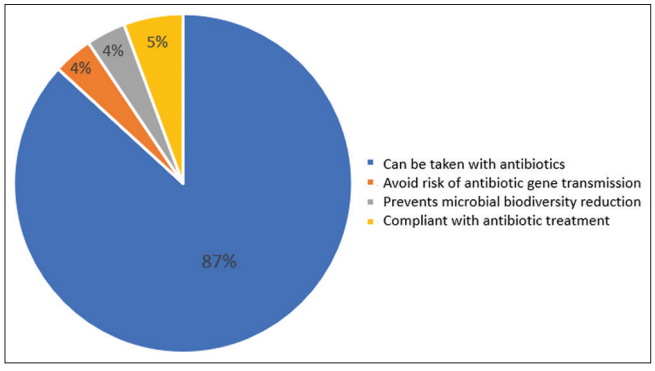

Figure 3: Benefits of *Saccharomyces boulardii:* Compatibility with antibiotics, microbial biodiversity preservation, and antibiotic gene transmission risk

and 7% associated it with diarrhea. Only 2% reported that changes in F/B ratio indicate both dysbiosis and IBD [Figure 4].

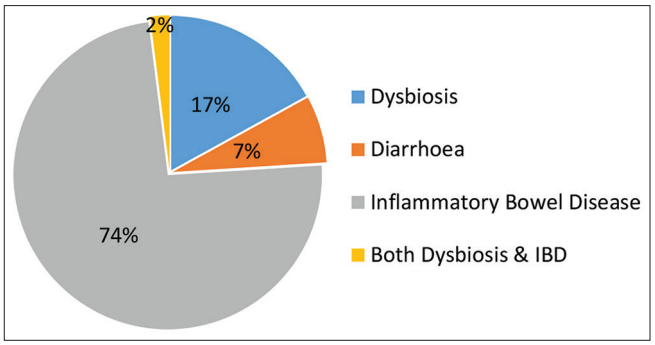

Figure 4: Changes in the *Firmicutes/Bacteroidetes*

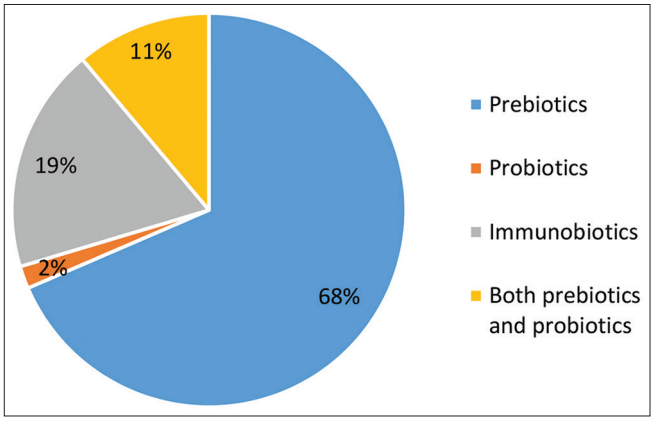

Figure 5: Interventions for the management of gut dysbiosis

6. Among prebiotics, probiotics, synbiotics, and immunobiotics, which one is not effective in managing gut dysbiosis?

   Approximately 68% of doctors expressed that prebiotic interventions are ineffective for managing gut dysbiosis, while 19% and 11% believed the same about probiotics and synbiotics, respectively. Only 2% indicated that synbiotics are not effective in managing gut dysbiosis [Figure 5].

1. Dr. Shalini B, MD Pediatrics

Shalini Children's Clinic, Hyderabad, Telangana

As per my experience, antibiotic exposure in children, even for short durations (3–5 days), disrupts gut microbiota, leading to dysbiosis characterized by reduced diversity, increased proinflammatory species, and antibiotic resistance. Early antibiotic exposure (<1000 days of birth) decreases essential gut microbiota diversity. Short-term implications include diarrhea while long-term effects involve gut barrier disruption and imbalance between the host immune and metabolic systems. Dysbiosis in children cannot be identified by the GA-map dysbiosis test. Immunobiotics are ineffective in managing dysbiosis while prebiotics promote gastrointestinal health and enhance the survival of live microbial dietary supplements. Bacterial

Box 1: Characteristic properties of *Saccharomyces boulardii*

Unique properties of *Saccharomyces boulardii CNCM I-745*:[11]

- Survives gastric acid and bile in lyophilized form
- Survives at body temperature (37°C)
- Exist in the competitive milieu of the intestinal tract
- Steady-state concentration attained within 3 days
- After discontinuation, it gets cleared within 3–5 days
- Naturally resistant to antibiotics and proteolysis

probiotics such as *L. rhamnosus*, *B. clausñ*, and *Lactobacillus* are available. Yeast probiotics, particularly *S. boulardii* CNCM I-745, are more beneficial without transmitting antibiotic-resistant genes. *S. boulardii* restores gut microbiota, reduces diarrhea duration compared to bacterial probiotics, and can be used alongside antibiotics. Short-term antibiotics (<7 days) treat bacterial infections in children. The F/B ratio measures normal intestinal homeostasis, and an increased or decreased F/B ratio is regarded as dysbiosis.

2. Dr. K Ratna Kumar, MD Pediatrics
Ratna Children's Clinic, Alwal, Secunderabad, Telangana

In my view, antibiotic exposure in children, even for short durations (3–5 days), disrupts gut microbiota, leading to dysbiosis characterized by reduced diversity, increased pro-inflammatory species, and antibiotic resistance. Early antibiotic exposure (<1000 days of birth) decreases essential gut microbiota diversity. Short-term implications include diarrhea, while long-term effects involve gut barrier disruption and imbalance between the host immune and metabolic systems. Dysbiosis in children cannot be identified by the GA-Map dysbiosis test. Immunobiotics are ineffective in managing dysbiosis while probiotics promote gastrointestinal health and enhance the survival of live microbial dietary supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausñ*, and *Lactobacillus* are available. Yeast probiotics, particularly *S. boulardii* CNCM I-745, are more beneficial without transmitting antibiotic-resistant genes. *S. boulardii* restores gut microbiota, reduces diarrhea duration compared to bacterial probiotics, and can be used alongside antibiotics. Short-term antibiotics (<7 days) treat bacterial infections in children. The F/B ratio measures normal intestinal homeostasis and any change in F/B ratio is regarded as dysbiosis.

3. Dr. Venu Gopal Reddy, MD Pediatrics,
Janani Children Hospital, Narasaraopeta, Andhra Pradesh

In light of my experience, antibiotic exposure in children, even for short durations (3–5 days), disrupts gut microbiota, leading to dysbiosis characterized by reduced diversity, increased proinflammatory species, and antibiotic resistance. Early antibiotic exposure (<1000 days of birth) decreases essential gut microbiota diversity. Short-term implications include constipation, diarrhea, and bloating while long-term effects involve gut barrier disruption and imbalance between the host immune and metabolic systems. Dysbiosis in children cannot be identified by stool tests. Prebiotics are ineffective in the management of dysbiosis. Probiotics promote gastrointestinal health and enhance the survival of live microbial dietary supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausñ*, and *Lactobacillus* are available. Yeast probiotics, particularly *S. boulardii* CNCM I-745, are more beneficial without transmitting antibiotic-resistant genes. *S. boulardii* restores gut microbiota reduces diarrhea duration compared to bacterial probiotics, and can be used alongside antibiotics. Short-term antibiotics (<7 days) treat bacterial infections in children. The F/B ratio measures normal intestinal homeostasis and an increased or decreased F/B ratio is regarded as IBD.

4. Dr. Somanath Reddy, MBBS
Nirupa Children, Hospital, Nellore, Andhra Pradesh

I believe that stool tests are generally unreliable in diagnosing dysbiosis in children. Probiotics are known to enhance gastrointestinal health and increase the survival of live microbial dietary supplements; however, prebiotics might not be able to control dysbiosis. Accessible choices include bacterial probiotics including *L. rhamnosus*, *B. clausñ*, and other *Lactobacillus* strains. However, when it comes to treating dysbiosis, yeast probiotics – particularly *S. boulardii* CNCM I-745 – offer definite benefits.

5. Dr. Shreekanth SBV, MBBS, DCH
Sai Sankara Hospital, Andhra Pradesh

Based on my clinical observations, identifying dysbiosis in children through stool tests remains elusive. Prebiotics demonstrate limited effectiveness in managing gut dysbiosis. However, yeast probiotics, particularly *S. boulardii* CNCM I-745, exhibit notable advantages. *S. boulardii* not only restores gut microbiota but also reduces diarrhea duration more effectively than bacterial probiotics. Importantly, it can be safely administered alongside antibiotics.

6. Dr. Sayed Sarwar Ali, MBBS, MD, Pediatrician
Clinic, Jagatsinghpur, Odisha

I believe that stool tests are not typically reliable for identifying dysbiosis in children. While prebiotics may not effectively manage dysbiosis, probiotics can support

gastrointestinal health and improve the survival of live microbial dietary supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausii*, and various *Lactobacillus* strains are accessible options. However, yeast probiotics, especially *S. boulardii* CNCM I-745, offer distinct advantages in addressing dysbiosis.

7. Dr. Sampath Penchala, MBBS, DNR
Rexcare Clinic, Hyderabad, Telangana

Based on my expertise, bacterial probiotics such as *L. rhamnosus*, *B. clausii*, and various strains of *Lactobacillus* are commonly accessible. However, yeast probiotics, specifically *S. boulardii* CNCM I-745, offer distinct advantages without the risk of transmitting antibiotic-resistant genes. *S. boulardii* effectively replenishes gut microbiota and demonstrates superior efficacy in shortening the duration of diarrhea when compared to bacterial probiotics. In addition, its compatibility with antibiotic therapy further underscores its utility in clinical settings.

8. Dr. Sabita Chandra Patel, MD, Pediatrician
Clinic, Jharsuguda, Odisha

I advocate for the use of yeast probiotics, particularly *S. boulardii* CNCM I-745, as they offer significant benefits without the risk of transmitting antibiotic-resistant genes. *S. boulardii* effectively restores gut microbiota and has been shown to shorten the duration of diarrhea in comparison to bacterial probiotics. Moreover, its compatibility with antibiotic treatment further enhances its utility in clinical practice.

9. Dr. S Venu Madhav, MD, Pediatrician
Om Clinic, Hanamkonda, Telangana

As per my opinion, prebiotics have limited efficacy in dysbiosis management. Nevertheless, I firmly endorse *S. boulardii* CNCM I-745 due to its notable advantages, and least risk of transmitting antibiotic-resistant genes. This yeast strain plays a crucial role in restoring gut microbiota and has exhibited superior effectiveness in shortening the duration of diarrhea when compared to bacterial probiotics.

10. Dr. Prem Kumar, MBBS, DCH
Yashoda Krishna Hospital, Hyderabad, Telangana

I too believe that yeast probiotics, particularly *S. boulardii* CNCM I-745, are more beneficial without transmitting antibiotic-resistant genes. *S. boulardii* restores gut microbiota, reduces diarrhea duration compared to bacterial probiotics, and can be used alongside antibiotics.

11. Dr. Pratap Kumar Das, MD
Clinic, Jharsuguda, Odisha

I have the opinion that yeast probiotics, specifically *S. boulardii* CNCM I-745, have increased efficacy and offer superior benefits without the risk of transmitting antibiotic-resistant genes. *S. boulardii* effectively restores gut microbiota, leading to a notable reduction in diarrhea duration compared to bacterial probiotics. Importantly, it can be safely utilized alongside antibiotic treatment.

12. Dr. Pasupuneri Johnson, MBBS, DCH
Thanusha Children Hospital, Narsampet, Telangana

As per clinical experience, I believe that prebiotics are not helpful in the management of dysbiosis. However, *S. boulardii* CNCM I-745 offers significant benefits without the risk of transmitting antibiotic-resistant genes. It plays a crucial role in restoring gut microbiota and has been shown to reduce diarrhea duration more effectively than bacterial probiotics.

13. Dr. P S Naveen Babu, MBBS, DCH
Stann's Hospital, Vijayawada, Andhra Pradesh

Based on my clinical experience, I have observed that prebiotics do not support in effective management of dysbiosis. However, I strongly advocate for *S. boulardii* CNCM I-745 due to its substantial GI benefits without the risk of transmitting antibiotic-resistant genes. It plays a pivotal role in restoring gut microbiota and has demonstrated superior efficacy in reducing diarrhea duration compared to bacterial probiotics.

14. Dr. Mukkara Shreenivasulu, MBBS, DCH
Hrudaya Hospital, Anantapur, Andhra Pradesh

Antibiotic exposure in children disrupts gut microbiota, leading to dysbiosis with reduced diversity and increased proinflammatory species. Early exposure exacerbates dysbiosis, impacting gut barrier function and long-term immune-metabolic balance. Yeast probiotics such as *S. boulardii* CNCM I-745 offer benefits without transmitting antibiotic-resistant genes, restoring gut microbiota, and reducing diarrhea duration more effectively than bacterial probiotics.

15. Dr. Kotagiri Bheemeshwar, MD, Pediatrician
Sri Suryodaya Children Hospital, Jagtial, Telangana

In my perspective, exposure to antibiotics in children disrupts gut microbiota, causing dysbiosis, characterized by reduced diversity and increased inflammation and antibiotic resistance. Early exposure (<1000 days) reduces essential gut microbiota diversity, leading to short-term issues such as constipation and long-term problems such as immune-metabolic imbalance. *S. boulardii* CNCM I-745, a probiotic without antibiotic-resistant genes, effectively restores gut microbiota and reduces diarrhea duration, making it a viable option alongside antibiotics.

16. Dr. Kondapalli Venkateswarlu, MBBS, DCH
Dr. Kondapalli Hospital, Narasaraopeta, Andhra Pradesh

Prebiotics have limited efficacy of prebiotics in managing dysbiosis. However, I advocate strongly for *S. boulardii* CNCM I-745 due to its significant benefits without the risk of transmitting antibiotic-resistant genes. It plays a crucial role in restoring gut microbiota and has shown superior effectiveness in reducing diarrhea duration compared to bacterial probiotics.

17. Dr. Kodali Radha Lavanya, MBBS, MD, Pediatric
St. Anns Hospital, Vijayawada, Andhra Pradesh

Bacterial probiotics such as *L. rhamnosus*, *B. clausï*, and *Lactobacillus* are commonly used. However, yeast probiotics, notably *S. boulardii* CNCM I-745, are often considered more beneficial than bacterial alternatives in managing dysbiosis.

18. Dr. K Gopinath, MBBS, DCH
Gopinath Children Hospital, Siricilla, Telangana

The GA-map dysbiosis test is not effective in identifying dysbiosis in children. Immunobiotics have shown limited effectiveness in managing dysbiosis, whereas prebiotics support gastrointestinal health and improve the survival of live microbial dietary supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausï*, and *Lactobacillus* are accessible options. However, yeast probiotics, particularly *S. boulardii* CNCM I-745, offer greater benefits without the risk of transmitting antibiotic-resistant genes.

19. Dr. K Anantha Reddy, MBBS, MD, Pediatrician
Ananth Children's Hospital, Vemula Wada, Telangana

S. boulardii CNCM I-745 is effective in restoring gut microbiota, shortening diarrhea duration compared to bacterial probiotics, and can be safely used alongside antibiotics. Short-term antibiotics (<7 days) are effective for treating bacterial infections in children. The F/B ratio serves as a measure of normal intestinal homeostasis, with deviations indicating inflammatory bowel disease.

20. Dr. G Masthanaiah, MBBS, MD, Pediatrician
Shree Nalandha Children, Hospital, Atwakas, Andhra Pradesh

Antibiotic exposure in early childhood reduces crucial gut microbiota diversity, causing short-term issues such as constipation, bloating, and diarrhea and long-term disruptions in gut barrier function and immune-metabolic balance. Dysbiosis in children eludes stool tests while prebiotics are ineffective. Probiotics, especially *S. boulardii* CNCM I-745, promote gastrointestinal health without transmitting antibiotic-resistant genes.

21. Dr. D Lingamurthy, MD, Pediatrician
Lotus Hospital, Jangaon, Telangana

Immunobiotics show limited effectiveness in managing gut dysbiosis. Prebiotics are beneficial for gastrointestinal health and improve the survival of live microbial dietary supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausï*, and *Lactobacillus* are widely available. However, yeast probiotics, especially *S. boulardii* CNCM I-745, are often considered more beneficial when compared to bacterial probiotics.

22. Dr. Bhukya Himabindu, MBBS, DCH
New Amma Multispeciality Hospital, Narsampet, Telangana

S. boulardii CNCM I-745 effectively restores gut microbiota, shortens diarrhea duration compared to bacterial probiotics, and can be safely administered alongside antibiotics. Short-term antibiotics (<7 days) are effective in treating bacterial infections in children. The F/B ratio serves as a measure of normal intestinal homeostasis, with deviations indicating diarrhea.

23. Dr. Bangari Sharath, MBBS, DCH
Sharath Children's Hospital, Karimnagar, Telangana

Dysbiosis in children cannot be diagnosed solely through stool tests, and prebiotics show limited effectiveness in managing it. Both probiotics and prebiotics are beneficial for gastrointestinal health and support the survival of live microbial dietary supplements. While bacterial probiotics such as *L. rhamnosus*, *B. clausï*, and *Lactobacillus* are accessible, yeast probiotics, especially *S. boulardii* CNCM I-745, are often considered more useful.

24. Dr. B S Patel, MD, Pediatrician
Sanjan Children's Hospital, Karimnagar, Telangana

Nowadays, prebiotics may not be helpful in effectively managing gut dysbiosis while probiotics support gastrointestinal health and improve the survival of live microbial supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausi*, and *Lactobacillus* are commonly used; however, yeast probiotics such as *S. boulardii* CNCM I-745 are often preferred for their benefits without the risk of transmitting antibiotic-resistant genes. *S. boulardii* is highly effective in restoring gut microbiota.

25. Dr. Amiya Parija, MD, Pediatrician
Sai Sudha Clinic, Cuttack, Odisha

I agree with fellow experts' opinion on bacterial probiotics. Furthermore, I have noted that prebiotics may not be effective in managing dysbiosis. However, I advocate strongly for *S. boulardii* CNCM I-745 due to its significant benefits in restoring gut microbiome without the risk of transmitting antibiotic-resistant genes. It has also shown superior efficacy in reducing diarrhea duration compared to bacterial probiotics.

26. Dr. Adla Ramesh, MBBS, DCH
Sangeetha Hospital, Narsampet, Telangana

In my perspective, antibiotic exposure in children disrupts gut microbiota, causing dysbiosis characterized by reduced diversity, increased proinflammatory species, and antibiotic resistance. Dysbiosis cannot be detected by a blood urea nitrogen test. While prebiotics show ineffectiveness, bacterial probiotics such as *L. rhamnosus* and yeast probiotics, especially *S. boulardii* CNCM I-745, are preferred for restoring gut microbiota.

27. Dr. A Kalyan Chakravarthy, MBBS, DCH
Siddhartha Hospital, Nellore, Andhra Pradesh

In my clinical experience, antibiotic exposure in children disrupts gut microbiota, leading to dysbiosis marked by reduced diversity, and increased proinflammatory species and antibiotic resistance. Probiotics, particularly *S. boulardii* CNCM I-745, are beneficial for restoring gut health without transmitting antibiotic-resistant genes, and the F/B ratio serves as a marker for intestinal homeostasis, with deviations indicating inflammatory bowel disease.

28. Dr. S Nagesh, MD Pediatrician
Rishitha Hospital, Hyderabad, Telangana

In my opinion, prebiotics and probiotics support gastrointestinal health and improve the survival of live microbial supplements. While bacterial probiotics such as *L. rhamnosus*, *B. clausi*, and *Lactobacillus* are commonly used, yeast probiotics, especially *S. boulardii* CNCM I-745, are often considered more beneficial.

29. Dr. Rama Krishna Reddy, MBBS, DCH
Mathru Sri Hospital, Sadashivapet, Telangana

In my opinion, early antibiotic exposure in children, even for brief periods, disrupts gut microbiota, leading to dysbiosis, characterized by reduced diversity, and increased proinflammatory species and antibiotic resistance. While short-term implications include gastrointestinal symptoms, long-term effects involve disrupting the gut barrier and immune-metabolic imbalance. Probiotics, particularly yeast-based, such as *S. boulardii*, offer benefits in restoring gut health, with a lower risk of transmitting antibiotic-resistant genes as compared to bacterial probiotics.

30. Dr. P. Srinivas Reddy, MBBS, DNB, Pediatrics
Srinivas Hospital, Hyderabad, Telangana

Bacterial probiotics and prebiotics have limited efficacy in addressing dysbiosis. However, I firmly advocate for *S. boulardii* CNCM I-745 due to its considerable advantages. This strain is pivotal in restoring gut microbiota and has demonstrated superior efficacy in shortening the duration of diarrhea compared to bacterial probiotics.

31. Dr. Mahalakshmi Jagatha, MBBS, Pediatrician
Mahalakshmi Children's Hospital, Vishakhapatnam, Andhra Pradesh

Prebiotics have shown limited effectiveness in addressing gut dysbiosis, whereas probiotics have been proven to promote gastrointestinal health and improve the survival of live microbial dietary supplements. Among probiotics, bacterial strains such as *L. rhamnosus*, *B. clausi*, and *Lactobacillus* are commonly used. However, yeast-based probiotics, particularly *S. boulardii* CNCM I-745, offer distinct benefits and are considered more advantageous in managing gut health.

32. Dr. Prakash Lalam, MBBS, DCH, DNB
Vedanta women and Children's Hospital, Vishakhapatnam, Andhra Pradesh

S. boulardii CNCM I-745 efficiently replenishes gut microbiota, reduces the duration of diarrhea more effectively than bacterial probiotics, and can be safely combined with antibiotic treatment.

33. Dr. Syed Shahid, MBBS, DCH
Shahid Children's Hospital, Palamaneru, Chittoor, Andhra Pradesh

As per my clinical experience, I observed that dysbiosis in children is not detectable through stool tests. Prebiotics lack efficacy in managing gut dysbiosis. Yeast probiotics, notably *S. boulardii* CNCM I-745, offer superior benefits. *S. boulardii* restores gut microbiota, shortens diarrhea duration compared to bacterial probiotics, and can be safely used alongside antibiotics.

34. Dr. B. Madhavi, MBBS, MD, Pediatrics
Mathrutva Children specialty and clinic, Tirupati, Andhra Pradesh

I think immunobiotics exhibit limited efficacy in addressing gut dysbiosis while prebiotics play a beneficial role in gastrointestinal health and enhance the viability of live microbial supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausñ*, and *Lactobacillus* are readily accessible, yet yeast probiotics, particularly *S. boulardii* CNCM I-745, are often preferred for their perceived benefits.

35. Dr. A Dheeraj Reddy, MD, Pediatrics
Dheeraj Hospital, Cuddapah, Andhra Pradesh

The GA-map dysbiosis test is not reliable for diagnosing dysbiosis in children. I agree that immunobiotics have limited efficacy in managing dysbiosis, while prebiotics enhance gastrointestinal health and the viability of live microbial supplements. Bacterial probiotics such as *L. rhamnosus*, *B. clausñ*, and *Lactobacillus* are readily available and help in managing dysbiosis, however, yeast probiotics such as *S. boulardii* CNCM I-745 offer superior benefits without the concern of transmitting antibiotic-resistant genes.

36. Dr. M Hemantha, MBBS, MD, Pediatrics
Hemanth Children Hospital, Cuddapah, Andhra Pradesh

Prebiotics have the least efficacy in managing dysbiosis. Yeast probiotics, particularly *S. boulardii* CNCM I-745, are superior in restoring gut microbiota when compared to bacterial probiotics.

37. Dr. Dhanasekhar RS, MD, Pediatrics
SLS children hospital, Tirupati, Andhra Pradesh

Prebiotics demonstrate limited efficacy in addressing gut dysbiosis, whereas probiotics have been proven to promote gut health. Yeast probiotics demonstrate superior effectiveness of yeast probiotics, especially *S. boulardii* CNCM I-745, in restoring gut microbiota.

38. Dr. R Suresh Kumar Reddy, MBBS, DNB, Pediatrics
Vanya Vatsodaya Clinic, Tirupati, Andhra Pradesh

S. boulardii CNCM I-745 effectively restores gut microbiota, demonstrates superior efficacy in reducing diarrhea duration compared to bacterial probiotics, and can be safely administered alongside antibiotic treatment.

39. Dr. T Ramesh Kumar Reddy, MBBS, DCH, DNB, Pediatrics
Sri Sai Suraksha Children's Hospital, Piler, Andhra Pradesh

From my perspective, antibiotic exposure in children disrupts gut microbiota, leading to dysbiosis marked by reduced diversity, heightened proinflammatory species, and antibiotic resistance. Dysbiosis cannot be identified through a blood urea nitrogen test. While prebiotics demonstrate limited effectiveness, bacterial probiotics such as *L. rhamnosus* and yeast probiotics, particularly *S. boulardii* CNCM I-745, are favored for their ability to restore gut microbiota.

40. Dr. G Mrudula, MBBS, DNB, Pediatrics
Ongole Children's Hospital, Ongole, Andhra Pradesh

Based on my clinical experience, I support the views of other experts on bacterial probiotics, and also agree prebiotics are ineffective in managing dysbiosis. However, I strongly believe that *S. boulardii* CNCM I-745 provides substantial benefits without the risk of transmitting antibiotic-resistant genes. It plays a vital role in restoring gut microbiota and has demonstrated superior efficacy in reducing diarrhea duration compared to bacterial probiotics.

41. Dr. C Obul Reddy, MBBS, DNB, Pediatrics
Ishaan Children's Hospital, Cuddapah, Andhra Pradesh

Yeast probiotics, especially *S. boulardii* CNCM I-745, demonstrate effectiveness in restoring gut microbiota and also have a lower risk of transmission of antibiotic-resistant genes.

42. Dr. Subba Reddy, MBBS, DCH
Mahaveer Children's Hospital, Kanigiri, Andhra Pradesh

S. boulardii CNCM I-745 effectively restores gut microbiota demonstrates superior efficacy in reducing diarrhea duration compared to bacterial probiotics and can be safely combined with antibiotic treatment.

43. Dr. Pradeep Y, MBBS, MD, Pediatrics
Yekollu Padmavathi Children's Hospital, Tirupati, Andhra Pradesh

Yeast probiotics, particularly, *S. boulardii* CNCM I-745 effectively restore gut microbiota, shorten diarrhea duration compared to bacterial probiotics, and can be safely administered alongside antibiotics.

44. Dr. Partha Saradhi Manyam, MBBS, MD, IDPCCM
Family Care Hospital, Tirupati, Andhra Pradesh

S. boulardii CNCM I-745 is a unique, yeast-based probiotic agent that demonstrates superior efficacy in reducing diarrhea duration compared to bacterial probiotics.

45. Dr. P Ravichandra Reddy, MBBS, DNB, Pediatrics
Ravi Chandra Reddy Clinic, Markapuram, Andhra Pradesh

Prebiotics and probiotics have limited effectiveness in improving gut health. However, yeast probiotics, especially *S. boulardii* CNCM I-745, demonstrate higher efficacy in restoring gut microbiota.

46. Dr. S M A Iqbal Muheeb, MBBS, DCH
Noble Children Hospital, Markapuram, Andhra Pradesh

Bacterial probiotics such as *L. rhamnosus*, *B. clausi*, and *Lactobacillus* are known to improve gut health. However, I have observed in my clinical practice that yeast probiotics, particularly *S. boulardii* CNCM I-745, have shown superior efficacy in replenishing gut microbiota when compared to bacterial probiotics.

47. Dr. S Hari Gopal, MBBS, DCH
Nikila Children's, Hospital, Rajampet, Andhra Pradesh

Yeast probiotics have been known to demonstrate the superior effectiveness of yeast probiotics, especially *S. boulardii* CNCM I-745, in restoring gut microbiota.

48. Dr. Ramadevi, MD, Pediatrics, Nagarajpet
Gnapika Children's Hospital, Cuddapah, Andhra Pradesh

Bacterial probiotics such as *L. rhamnosus*, *B. clausi*, and *Lactobacillus* are commonly used to improve gastrointestinal health. However, yeast-based probiotics, particularly *S. boulardii* CNCM I-745, offer distinct benefits and are considered more advantageous in managing gut health.

49. Dr. K Krishna Sekhar, MBBS, DCH, DNB,
Moksha Children's Hospital, Cuddapah, Andhra Pradesh

Based on my clinical experience, I align with the views of other experts on bacterial probiotics and also agree that prebiotics are ineffective in managing dysbiosis while agreeing that yeast probiotics, especially *S. boulardii* CNCM I-745, are effective in restoring gut microbiota.

50. Dr. J Srinivasa Raja, MBBS, MD, Pediatrics
Vennela Hospital, Cuddapah, Andhra Pradesh

Bacterial probiotics and prebiotics are not effective enough to manage dysbiosis. However, yeast-based probiotics *S. boulardii* CNCM I-745 demonstrate significant benefits and effectively restore gut microbiota and have shown superior effectiveness in reducing diarrhea duration compared to bacterial probiotics.

51. Dr. V Raghuram Reddy, MBBS, DCH
Raghuram Children's Hospital, Guntur, Andhra Pradesh

S. boulardii CNCM I-745 efficiently replenishes gut microbiota, exhibits superior effectiveness in reducing diarrhea duration compared to bacterial probiotics, and can be safely combined with antibiotic treatment.

52. Dr. P Vengaiah, MBBS, DCH
P.V.S Hospital, Nellore, Andhra Pradesh

I also share the same viewpoint as the other doctors regarding yeast-based probiotics, particularly *S. boulardii* CNCM I-745, which is unique and superior in restoring gut microbiota.

53. Dr. D Manoj, MBBS, MD, FNNF, FPCC
Siddhartha Children's Hospital, Rajahmundry, Andhra Pradesh

Yeast probiotics, especially *S. boulardii* CNCM I-745, have been observed to demonstrate superior effectiveness of yeast probiotics by restoring gut microbiota and have the least risk of transmitting antibiotic-resistant genes.

54. Dr. P Ravikiran, MBBS, MD, Pediatrics
Nest Hospital, Rajahmundry, Andhra Pradesh

In my opinion, yeast probiotics, especially *S. boulardii* CNCM I-745 are superior, in restoring gut microbiota and thus, effective in managing dysbiosis.

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