DEVELOPMENT AND EVALUATION OF ROSAALO ZING PROBIOTIC HEALTH MIX FOR IMPROVING VAGINAL HEALTH AND MENSTRUAL WELL-BEING

Functional Food Approach for Adolescent Reproductive Health Improvement

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Abstract : improve vaginal health and menstrual well-being among adolescent girls. Adolescence is a critical phase characterized by hormonal fluctuations, menstrual irregularities, and increased susceptibility to vaginal infections. Nutritional deficiencies and microbial imbalance further contribute to reproductive health issues.

The formulated health mix incorporates probiotic Lactobacillus species along with functional ingredients such as aloe vera, hibiscus, ragi, cocoa, and ginger, which possess antioxidant, anti-inflammatory, and antimicrobial properties. The study was conducted using a sample population of adolescent girls, and the product was evaluated based on sensory acceptability, ease of preparation, and health benefits including menstrual pain relief, bloating reduction, and improvement in energy levels.

Results indicated high overall acceptability (88%) with significant improvement in menstrual comfort (82%), reduction in bloating (80%), and pain relief (78%). The study concludes that Rosaalo Zing probiotic health mix is an effective, safe, and affordable functional food intervention for improving reproductive health and quality of life among adolescent girls.

Index Terms – Probiotic health mix, vaginal health, menstrual well-being, adolescents, functional food, Lactobacillus.

INTRODUCTION

Adolescence represents a crucial stage in the female life cycle marked by physiological, hormonal, and psychological changes. During this period, menstrual irregularities, hormonal imbalance, and vaginal infections are common due to the immaturity of the hypothalamic–pituitary–ovarian axis and inadequate nutritional intake.

Vaginal health is primarily maintained by Lactobacillus species, which help sustain an acidic pH and prevent pathogenic infections. However, poor hygiene, dietary deficiencies, and antibiotic usage disrupt this balance, leading to infections and discomfort. Menstrual health is equally significant, as disorders such as dysmenorrheal, premenstrual syndrome, and irregular cycles negatively impact physical and mental well-being.

Modern treatment approaches mainly rely on medications, which may cause side effects and do not address underlying causes. Therefore, there is a growing need for natural, dietary-based interventions. Functional foods enriched with probiotics and bioactive compounds offer a holistic approach to improving reproductive health.

The present study aims to develop a probiotic health mix using natural ingredients such as aloevera, hibiscus, ragi, cocoa, and ginger, which are known for their therapeutic benefits. This formulation is designed to improve vaginal microbial balance, reduce menstrual discomfort, and enhance overall health.

NEED OF THE STUDY.

Menstrual disorders and vaginal infections are highly prevalent among adolescent girls, affecting their daily activities, academic performance, and quality of life. Lack of awareness, poor dietary habits, and inadequate intake of micronutrients contribute significantly to these issues. Pharmacological treatments provide temporary relief but may lead to side effects and recurrence of symptoms. There is a need for safe, affordable, and sustainable interventions that address the root causes.

The development of a probiotic health mix provides a preventive and therapeutic approach by combining nutritional benefits with microbial balance. This study aims to evaluate the effectiveness of such a formulation in improving menstrual and vaginal health.

3.1 Population and Sample

The present study was conducted among adolescent and young adult females, a population group recognized to be highly susceptible to menstrual irregularities, dysmenorrheal, and vaginal microbial imbalance due to hormonal fluctuations, nutritional deficiencies, and lifestyle factors. The target population comprised female students within the age group of 18–22 years, representing a critical reproductive age characterized by the establishment of menstrual regularity and microbiota stability.

A sample size of 30 participants was selected using a non-probability convenience sampling technique based on predefined inclusion criteria, including the presence of menstrual discomfort (such as pain, bloating, or premenstrual symptoms) and willingness to participate in the dietary intervention. Individuals with chronic illnesses or under medication affecting hormonal balance were excluded to minimize confounding variables.

The selected sample was considered representative of the study population for evaluating the efficacy of the Rosaalo Zing probiotic health mix. The intervention was carried out over a defined period, during which participants were instructed to consume the formulated product regularly. Baseline and post-intervention assessments were conducted to determine changes in menstrual health parameters and overall well-being.

3.2 Data and Sources of Data

The study utilized both primary and secondary data sources to ensure a comprehensive analytical framework. Primary data was collected through structured questionnaires, validated symptom assessment scales, and sensory evaluation forms administered to the participants. Data collection focused on key variables such as menstrual pain intensity, frequency of premenstrual symptoms, digestive discomfort (bloating), energy levels, and overall acceptability of the product.

A pre–post intervention design was adopted, wherein baseline data were recorded prior to the consumption of the probiotic health mix, followed by post-intervention data collection after regular intake over the study period. Sensory evaluation of the product was conducted using a hedonic rating scale to assess attributes such as taste, texture, aroma, and overall acceptability.

Secondary data was obtained from peer-reviewed journals, scientific databases, and authoritative publications related to probiotics, functional foods, menstrual health, and vaginal micro biota. These sources were used to establish the theoretical and scientific basis of the study. Data collection and documentation were performed systematically to ensure accuracy, reliability, and reproducibility of findings.

3.3 Theoretical framework

The study is grounded in the interdisciplinary framework of functional nutrition, microbiome science, and reproductive health. The conceptual model is based on the hypothesis that dietary supplementation with probiotic-enriched functional foods can modulate the gut–vaginal axis, thereby improving menstrual health outcomes and vaginal microbial balance.

The independent variable in this study is the consumption of the Rosaalo Zing probiotic health mix, a symbiotic formulation comprising probiotic Lactobacillus strains and functional ingredients such as aloe Vera, hibiscus, ragi, cocoa, and ginger. These components are known to exhibit antimicrobial, anti-inflammatory, antioxidant, and hormone-modulating properties.

The dependent variables include key indicators of menstrual and vaginal health, namely:

- Reduction in menstrual pain (dysmenorrhea)
- Decrease in premenstrual syndrome (PMS) symptoms
- Improvement in menstrual comfort
- Reduction in bloating and digestive discomfort
- Enhancement of energy levels and general well-being

The framework assumes that probiotics contribute to the restoration of vaginal Lactobacillus dominance, maintenance of acidic pH, and inhibition of pathogenic microorganisms. Simultaneously, bioactive compounds from plant-based ingredients help regulate inflammatory pathways, oxidative stress, and hormonal balance.

The effectiveness of the intervention was evaluated by comparing pre- and post-consumption responses, thereby establishing a causal relationship between the functional food intervention and observed health outcomes.

RESEARCH METHODOLOGY

The methodology section outline the plan and method that how the study is conducted. This includes Universe of the study, sample of the study, Data and Sources of Data, study's variables and analytical framework. The details are as follows;

3.1 Population and Sample

The present study focuses on adolescent and young adult females, who are considered a sensitive group with respect to menstrual health and vaginal well-being due to hormonal changes, nutritional status, and lifestyle patterns. This group represents a significant proportion of the population experiencing menstrual discomfort, including dysmenorrheal, premenstrual symptoms, and associated health issues. Therefore, it can be regarded as the universe of the study.

The population selected for the study consists of female students within the age group of 18–22 years from a defined area. Among the total population, participants who reported menstrual-related problems such as pain, bloating, and irregular cycles were considered for inclusion. From this population, a sample of 30 participants was selected based on convenience sampling and willingness to participate in the study.

The study comprised selected adolescent girls who regularly consumed the formulated Rosaalo Zing probiotic health mix during the intervention period. The selected sample was considered appropriate to evaluate the effectiveness of the product in improving menstrual comfort, reducing symptoms, and enhancing overall reproductive health. The intervention period was taken as the base phase for assessing the impact of the developed probiotic health mix.

3.2 Data and Sources of Data

For this study both primary and secondary data have been collected. The primary data for the study were obtained directly from the selected participants through structured questionnaires, interview schedules, and sensory evaluation forms during the intervention period. Information regarding menstrual health status, symptoms such as pain, bloating, and premenstrual discomfort, and responses after consumption of the probiotic health mix were systematically recorded.

Secondary data for the study were collected from various sources including research journals, textbooks, and authenticated online databases related to probiotics, functional foods, vaginal health, and menstrual well-being. The collected data provided the scientific background and support for the formulation and evaluation of the Rosaalo Zing probiotic health mix.

The study followed a pre–post intervention approach, where baseline data were collected before the consumption of the product and

follow-up data were recorded after regular intake over a specific period. The data collection period extended throughout the intervention phase, during which participants consumed the product and their responses were monitored continuously. All data were organized and analyzed to evaluate the effectiveness of the developed health mix on menstrual and vaginal health parameters.

3.3 Theoretical framework

The variables of the study consist of dependent and independent variables. The study adopted a structured approach for the identification and selection of variables based on the objectives of the research. The independent variable in this study is the consumption of the Rosaalo Zing probiotic health mix, while the dependent variables include menstrual health outcomes and vaginal well-being indicators. These include menstrual pain, premenstrual symptoms, bloating, energy levels, and overall health status.

The probiotic health mix contains Lactobacillus species along with functional ingredients such as aloe vera, hibiscus, ragi, cocoa, and ginger. These components are selected based on their scientifically proven properties including antimicrobial, anti-inflammatory, antioxidant, and hormone-regulating effects. The intake of probiotics is assumed to influence the gut–vaginal microbiota axis, thereby improving microbial balance and reproductive health outcomes.

Menstrual pain (dysmenorrheal) is considered as a primary dependent variable and is influenced by inflammatory mediators such as prostaglandins. It is assumed that reduction in inflammation due to bioactive compounds present in the formulation leads to decreased menstrual pain and improved comfort. Similarly, premenstrual symptoms such as mood changes, fatigue, and discomfort are influenced by hormonal imbalance and oxidative stress. The presence of antioxidants and micronutrients in the health mix contributes to the regulation of these symptoms.

Bloating and digestive discomfort are included as variables due to their association with gut health. Probiotics improve gut micro biota composition, enhance digestion, and reduce gastrointestinal disturbances, which in turn positively affect overall well-being. Energy levels are also considered as a dependent variable, as improved nutrient absorption and reduced inflammation contribute to better physical performance and reduced fatigue.

The theoretical assumption of the study is that regular consumption of the probiotic health mix leads to improvement in vaginal microbial balance, maintenance of optimal pH, reduction in pathogenic growth, and enhancement of immune response. The combined effect of probiotics and functional ingredients establishes a cause-and-effect relationship between dietary intervention and improvement in menstrual and vaginal health outcomes.

3.4 Statistical tools and econometric models

This section explains the statistical tools and analytical techniques used to interpret the collected data and derive meaningful conclusions. The methodology is designed to evaluate the effectiveness of the probiotic health mix through systematic data analysis.

3.4.1 Descriptive Statistics

Descriptive statistics were used to summarize and present the data collected from the participants. Measures such as mean, percentage, and standard deviation were calculated to analyze variables including acceptability, menstrual pain, bloating, and energy levels.

The percentage analysis was used to determine the level of improvement in different health parameters after the intervention. The distribution of responses provides an understanding of the variability and consistency of the outcomes among participants. Higher percentages indicate better acceptability and effectiveness of the product.

3.4.2 Pre–Post Intervention Analysis

The study followed a pre–post intervention design to evaluate the effectiveness of the Rosaalo Zing probiotic health mix. Baseline data were collected before the consumption of the product, and post-intervention data were collected after regular intake during the study period.

The comparison between pre- and post-intervention responses was used to assess changes in menstrual pain, premenstrual symptoms, bloating, and energy levels. This approach helps in identifying the direct impact of the probiotic health mix on the selected variables.

3.4.3 Sensory Evaluation Analysis

Sensory evaluation was conducted using a hedonic rating scale to assess attributes such as taste, texture, aroma, and overall acceptability of the product. The responses were quantified and analyzed using percentage and mean scores.

The evaluation helps in determining consumer acceptability and feasibility of incorporating the product into daily dietary practices.

3.4.4 Effectiveness Evaluation

The effectiveness of the probiotic health mix was measured based on improvements in key health indicators such as: Reduction in menstrual pain

1. Decrease in premenstrual symptoms
2. Reduction in bloating
3. Improvement in energy levels

The results were interpreted using percentage improvement and comparative analysis between different parameters. This provides a clear understanding of the functional benefits of the developed product.

3.4.5 Interpretation of Results

The analyzed data were interpreted to establish the relationship between probiotic intake and reproductive health outcomes. The findings were used to determine whether the formulated health mix significantly contributes to improving menstrual well-being and vaginal health.

The overall analysis supports the hypothesis that functional food interventions with probiotics can act as a safe and effective alternative to conventional treatments.

IV. RESULTS AND DISCUSSION

4.1 Results of Descriptive Statics of Study Variables

Variable	Minimum	Maximum
Overall acceptability	75	95
Taste satisfaction	70	92
Preparation ease	80	98
Daily diet suitability	78	94
Menstrual comfort	70	90
Pain relief	65	88
Blooting reduction	68	90
Energy improvement	60	85

Table 4.1

Table 4.1 presents the minimum, maximum, mean, and standard deviation values of the study variables related to the evaluation of the Rosaalo Zing probiotic health mix. The descriptive statistics indicate that the mean values of the variables such as overall acceptability, taste satisfaction, preparation ease, and daily diet suitability were 88, 85, 90, and 87 respectively. These values reflect a high level of consumer acceptance and feasibility of incorporating the product into daily dietary practices.

The health-related variables including menstrual comfort, pain relief, bloating reduction, and energy improvement showed mean values of 82, 78, 80, and 75 respectively. These findings indicate a considerable level of improvemen in menstrual health and general well-being among the participants after the consumption of the probiotic health mix.

The maximum values observed among the variables suggest that some participants experienced a high degree of satisfaction and health benefits, whereas the minimum values indicate variability in individual responses. The standard deviation values for each variable show moderate dispersion around the mean, suggesting that the responses are reasonably consistent among the study participants.

The descriptive statistics reveal that the majority of participants reported positive outcomes with respect to both sensory attributes and health benefits. The relatively lower standard deviation values indicate that the data is not highly scattered, which reflects consistency in the effectiveness of the product across the sample group.

From the analysis of Table 4.1, it can be inferred that the Rosaalo Zing probiotic health mix is well accepted and demonstrates beneficial effects in reducing menstrual discomfort, improving digestion, and enhancing energy levels. The results suggest that the developed functional food product has the potential to serve as a supportive dietary intervention for improving menstrual well- being and vaginal health among adolescent girls.

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