Study of the Preventive Effects and Mechanisms of Yeast β-Glucan on Upper Respiratory Tract Infections

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Study Protocol and Statistical Analysis Plan:

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1 Background

Upper respiratory tract infections (URTIs) are acute mucosal infectious diseases caused by pathogens invading the respiratory mucosa, leading to disruption of the epithelial barrier, activation of the immune system, and subsequent inflammatory responses. Clinical manifestations include nasal congestion, rhinorrhea, sore throat, cough, and hoarseness. Common causative pathogens include rhinoviruses, coronaviruses, influenza viruses, adenoviruses, and respiratory syncytial virus. Although most URTIs are self-limiting, their high incidence, recurrence, and transmissibility—especially in densely populated environments such as schools and workplaces—pose a considerable public health burden. Allergic rhinitis (AR) is a chronic inflammatory disease of the upper respiratory tract mediated by immunoglobulin E (IgE), with typical symptoms including nasal itching, sneezing, watery nasal discharge, and nasal obstruction. Due to the persistent inflammatory state of the nasal mucosa in AR patients, along with impaired epithelial barrier function, reduced ciliary activity, and diminished secretion of secretory immunoglobulin A (sIgA), the defense capacity against viral and bacterial pathogens is significantly weakened. As a result, AR patients are more susceptible to recurrent URTIs. Additionally, the seasonal peak of AR often overlaps with the high-incidence period of URTIs, further increasing the risk of infection. Therefore, individuals with AR can be considered a high-risk population for URTIs and are ideal candidates for evaluating preventive interventions.

The human gastrointestinal tract harbors a vast and diverse microbial community that plays a vital role in maintaining immune homeostasis, mucosal barrier integrity, and protection against infections. As potential modulators of gut microbiota, probiotics and prebiotics have been widely used to improve disease phenotypes and clinical outcomes associated with dysbiosis. Probiotics are live microorganisms which, when administered in adequate amounts, confer health benefits to the host. Several studies have shown that probiotics can reduce the incidence, duration, and severity of common colds and sore throat symptoms. A 12-week randomized controlled trial demonstrated that

probiotics could lower the occurrence of URTIs, possibly by enhancing serum interferon-gamma (IFN-γ) and intestinal sIgA levels.

Prebiotics are substrates that are not digestible or absorbable by the host but can be selectively utilized by beneficial microorganisms to modulate the composition and/or activity of the gut microbiota, thereby conferring health benefits. However, studies focusing on prebiotics for the prevention of URTIs remain relatively limited. Yeast β-glucan, a high-molecular-weight natural polysaccharide and a commonly used prebiotic, has been shown to possess multiple biological activities, including immunomodulatory, anti-inflammatory, and gut microbiota-regulating effects. Some evidence suggests that yeast β-glucan can improve immune function and reduce the duration and severity of cold and flu symptoms in healthy young and middle-aged adults. However, no relevant studies have been reported in populations with AR.

In summary, given the increased frequency of URTIs in the post-pandemic era, there is an urgent need to identify effective strategies for prevention. Preliminary evidence indicates that yeast β-glucan may have preventive effects against URTIs, but the current body of research is limited, particularly in AR populations who are more susceptible. Therefore, this study aims to conduct a randomized, double-blind, placebo-controlled intervention trial among college students with persistent AR symptoms to evaluate the preventive effect and underlying mechanisms of yeast β-glucan on URTIs, and to provide scientific evidence supporting its prophylactic use in high-risk populations.

2 Objectives

(1) To evaluate the effect of yeast β-glucan on the incidence and severity of URTIs.

(2) To explore the potential mechanisms underlying the preventive effect of yeast β-glucan on URTIs.

3 Design and Methods

3.1 Participants

This study plans to recruit current students at Lanzhou University who have persistent AR symptoms as research participants.

3.1.1 Inclusion Criteria:

Participants must meet all of the following conditions:(1) Aged between 18 and 35 years; (2) Meet the diagnostic criteria for persistent AR as defined in the Chinese Guidelines for the Diagnosis

and Treatment of Allergic Rhinitis (2022, Revised Edition): ①Symptoms: At least two of the following—paroxysmal sneezing, watery rhinorrhea, nasal itching, and nasal congestion—lasting or occurring for more than 1 hour per day; may be accompanied by ocular symptoms such as tearing, itchy eyes, and redness; ②Persistent AR: Symptom onset on ≥4 days per week and duration ≥4 consecutive weeks; (3) Have not used probiotics, prebiotics, synbiotics, antihistamines, corticosteroids, or immunosuppressants within one month prior to screening; (4) Willing and able to maintain regular levels of physical activity and dietary patterns throughout the study period; (5) Provide signed informed consent voluntarily.

3.1.2 Exclusion Criteria:

Participants will be excluded if they meet any of the following:(1) Use of antibiotics, osmotic laxatives (e.g., magnesium sulfate, lactulose), anthraquinone-based laxatives (e.g., rhubarb, aloe, senna), or gastrointestinal prokinetic agents (e.g., metoclopramide, domperidone, cisapride) within one month prior to screening; (2) Diagnosis of non-allergic rhinitis (including vasomotor, infectious, hormonal, or drug-induced rhinitis), nasal polyps, severe nasal septum deviation, cerebrospinal fluid rhinorrhea, or aspirin-exacerbated respiratory disease (AERD); (3) Uncontrolled coexisting allergic conditions such as sinusitis, otitis media, allergic asthma, or atopic dermatitis; (4) History of serious gastrointestinal disorders (e.g., chronic diarrhea, inflammatory bowel disease), or gastrointestinal endoscopy within the past month; (5) Presence of congenital genetic disorders, primary immunodeficiency diseases, severe systemic illnesses, or malignant tumors; (6) Receipt of influenza vaccination within the past 6 months; (7) Pregnant or lactating women, or individuals planning to become pregnant in the near future.

Individuals meeting all inclusion criteria and none of the exclusion criteria will be enrolled as study participants for intervention.

3.2 Study Design

This study is designed as a randomized, double-blind, placebo-controlled human intervention trial. All enrolled participants will be stratified by sex and body mass index (BMI) and then randomly assigned to either the yeast β-glucan group or the control group. During the intervention period, participants in the yeast β-glucan group will take two capsules daily after meals, while participants in the control group will take two placebo capsules. The total study duration is 15 weeks, consisting of a 1-week run-in period, a 12-week intervention period, and a 2-week follow-up period.

3.3 Intervention Protocol

Participants in the intervention group will take two yeast β-glucan capsules per day, with each capsule containing 250 mg of yeast β-glucan along with an appropriate amount of maltodextrin and silicon dioxide. The control group will take an equal number of placebo capsules daily, which are identical in form, taste, appearance, and packaging to the intervention product but contain only maltodextrin and a small amount of silicon dioxide. All participants will take two capsules once daily with warm water after meals.

3.4 Safety Assessment of Yeast β-Glucan

The yeast β-glucan used in this study is supplied by Angel Yeast Co., Ltd. In 2010, the Chinese Ministry of Health officially approved yeast β-glucan as a new food ingredient, indicating that it can be safely used in various food products. Therefore, yeast β-glucan is considered to have a favorable safety profile. Nevertheless, any adverse events will be continuously monitored during the study and reported and handled in accordance with ethical requirements.

3.5 Randomization, Blinding, and Unblinding

Participants will be randomly assigned to either the yeast β-glucan group or the control group, ensuring balance in sex and BMI between the groups. The randomization sequence will be concealed using sequentially numbered, opaque sealed envelopes. Group assignment will occur after participants provide informed consent and pass the initial screening.

Both participants and investigators will be blinded to group allocation. Only the study designer will have access to the randomization codes. All intervention products and sample labels will be coded identically to prevent accidental unblinding. In the event of a serious adverse reaction potentially related to the intervention, the affected participant will be unblinded and withdrawn from the trial.

3.6 Sample Size Estimation and Statistical Analysis

The sample size was calculated using the standard formula for randomized controlled trials：

$$N = \frac{\left(Z_{1-\alpha}\sqrt{2\bar{p}(1-\bar{p})} + Z_{\beta}\sqrt{p_1(1-p_1) + p_2(1-p_2)}\right)^2}{(p_1 - p_2)^2}$$

Using URTIs incidence as the primary outcome, with parameters $\alpha = 0.05$, $\beta = 0.1$, $p_1 = 0.50$, and $p_2 = 0.20$, the required sample size is approximately $N \approx 42$ per group, or 84 participants in total. Considering an anticipated 15% dropout rate, a total of 96 participants with persistent AR will be

recruited.

All statistical analyses will be conducted using SAS version 9.4. Continuous variables will be expressed as means ± standard deviation, while ordinal and categorical variables will be expressed as proportions. Group comparisons will be conducted using t-tests or Kruskal–Wallis rank-sum tests for continuous variables, and Chi-square or Fisher's exact tests for categorical variables. A two-sided p-value of < 0.05 will be considered statistically significant.

For outcomes measured at multiple time points (e.g., weeks 0 and 12), such as Total Nasal Symptom Score (TNSS) and inflammatory cytokine levels, linear mixed-effects models (LMMs) will be used to assess the effects of time, group, and their interaction. Post hoc analyses will compare the trajectories of changes between the intervention and control groups at each time point.

3.7 Outcome Measures

3.7.1 Primary Outcome

Incidence of URTIs: Occurrence of upper respiratory tract infections (URTIs) will be monitored daily via participant self-report questionnaires.

3.7.2 Secondary Outcomes

(1) Wisconsin Upper Respiratory Symptom Survey (WURSS-24): In the event of a URTI episode, the WURSS-24 questionnaire will be used to assess symptom severity and its impact on quality of life.

(2) Total Nasal Symptom Score (TNSS): TNSS evaluates the severity of four nasal symptoms: nasal itching, sneezing, rhinorrhea, and nasal congestion. Each symptom is scored from 0 to 3, with a total score ranging from 0 to 12. A higher score indicates more severe symptoms.

(3) Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ): The RQLQ consists of 28 items across seven domains including daily activities, sleep, nasal/ocular symptoms, and emotional impact. Each item is scored from 0 to 6, with higher scores indicating greater impairment. The effect of intervention on quality of life will be assessed by comparing scores before and after the intervention.

(4) Inflammatory Cytokines (IFN-γ, IL-4, IL-10, IL-6, TNF-α): Fasting plasma levels of inflammatory cytokines will be measured using high-sensitivity ELISA kits. The ratio of IFN-γ to IL-4 will be calculated to indirectly reflect Th1/Th2 immune balance.

(5) These will be measured using an automated biochemical analyzer to evaluate systemic inflammation and liver and kidney function, serving as safety monitoring indicators.

(6) Fecal Biomarkers: Gut microbiota composition will be assessed using 16S rRNA gene amplicon sequencing. Short-chain fatty acids (SCFAs) will be quantified via gas chromatography–mass spectrometry (GC-MS). Fecal sIgA will be measured by ELISA. Bristol stool form scale will be used to evaluate changes in bowel habits and constipation improvement.

3.8 Adverse Events

All adverse events (AEs) occurring during or after the intervention period will be recorded, including subjective discomfort, symptom exacerbation, and laboratory abnormalities. Serious adverse events (SAEs) refer to medical incidents that result in death, life-threatening conditions, hospitalization, or significant functional impairment. All AEs will be graded according to the NCI-CTCAE v5.0 criteria. Investigators will assess the causality between each event and the intervention (e.g., definitely related, possibly related, unrelated), and document all findings in the case report form (CRF) for final statistical analysis. In the event of an SAE, the research team will report it in writing to the Ethics Committee and regulatory authority within 24 hours and manage it promptly as per ethical guidance. During the study, participants will be followed up weekly, and investigators will actively inquire about and record any potential adverse events.

3.9 Ethical Considerations

This study has been approved by the Ethics Committee of the School of Public Health, Lanzhou University (Approval No.: IRB25041502). All participants will sign written informed consent prior to enrollment. The consent form will include details regarding the study objectives, methods, potential risks and benefits, AE management, and follow-up plan.

Participants are free to withdraw from the study at any time without any reason and without affecting their medical care. All collected data will be anonymized and securely stored for research purposes only, ensuring confidentiality and data protection.

If any adverse events occur due to the intervention, the research team will be responsible for providing appropriate medical support and treatment. The study will be conducted under continuous oversight by the Ethics Committee, in compliance with the *Declaration of Helsinki*, *Good Clinical Practice (GCP)*, and relevant national regulations.

4 Procedures

4.1 Participant Recruitment, Informed Consent, and Baseline Survey

Participants will be recruited through advertisements or posters at Lanzhou University.

Interested volunteers will be asked to complete a screening questionnaire. Based on predefined inclusion and exclusion criteria, preliminary eligibility will be assessed. Those who pass the initial screening will be invited for a face-to-face interview with the research team, during which the study objectives, procedures, interventions, potential risks, and expected benefits will be fully explained. Participants who provide written informed consent after understanding the study details will be formally enrolled. A total of approximately 96 participants will be recruited. All participants will be assigned a unique ID code to ensure data confidentiality and for follow-up tracking.

4.2 Baseline Assessments and Sample Collection

Before randomization and intervention, all enrolled participants will complete the following baseline assessments:

(1) Questionnaires: Including demographic information (age, gender, ethnicity, lifestyle habits), allergen exposure, allergic history, medical and family history, TNSS, RQLQ, and dietary intake assessment.

(2) Anthropometric Measurements: Height, weight, body fat percentage.

(3) Blood Sampling: For immune and inflammatory biomarker analysis.

(4) Fecal Sampling: For gut microbiota profiling via 16S rRNA sequencing.

4.3 Randomization

Participants will be randomly assigned to either the yeast β-glucan group or the placebo group. Randomization will be stratified to ensure balance between the groups in terms of sex and BMI.

4.4 Intervention

Participants in the yeast β-glucan group will take two capsules daily, each containing yeast β-glucan. The placebo group will receive two capsules identical in form, taste, appearance, and packaging, but without active ingredients. Each bottle contains 90 capsules, and participants will receive two bottles for the intervention period. During the trial, all participants are instructed not to consume any other probiotics, prebiotics, or synbiotics, and to maintain their usual dietary habits and physical activity levels. After the intervention period, participants in the placebo group will receive yeast β-glucan capsules as a post-trial nutritional benefit to ensure ethical fairness.

4.5 Follow-up

4.5.1 Follow-up Components:

(1) Participants will be followed up at week 0 and week 12 for questionnaire assessments

(TNSS, RQLQ), dietary surveys, anthropometric measurements (height, weight, body fat), and sample collection (blood, urine, feces).

(2) Daily monitoring for URTI symptoms will be conducted. In the event of URTIs, WURSS-24 will be administered to assess symptom severity and duration, along with medication use (type, dose, and timing). All participants will be trained prior to baseline on proper questionnaire completion to ensure accuracy and consistency.

(3) Adherence Monitoring: Participants must submit daily photos of capsule intake via the designated survey platform or study group chat. Investigators will verify remaining capsules during each follow-up to calculate adherence. Cases of missed or discontinued use will be recorded and evaluated for potential exclusion.

4.5.2 Data Collection Procedures:

(1) Basic Information & Physical Measures: Conducted face-to-face in the morning while fasting at week 0 and week 12. Fecal samples will also be collected one week after the intervention.

①Basic Information Survey：A structured face-to-face questionnaire will be administered to collect participants' basic demographic and lifestyle information. The questionnaire includes:

Personal Information: Name, sex, age, etc.

Lifestyle factors: Physical activity, smoking status, alcohol consumption.

Medical history: Past diseases, family history of allergic or chronic diseases.

Allergen exposure history: Self-reported sensitization or known allergens.

URTIs history: Frequency and severity of past upper respiratory tract infections.

②Physical Measurements： Standardized anthropometric measurements will be performed to assess: Height, weight, waist circumference, hip circumference, and blood pressure. BMI (Body Mass Index) will be calculated as: BMI=Weight (kg)/Height (m^2). Values will be recorded to two decimal places (kg/m^2).

③Biological Sample Collection：

Blood Sample: Fasting venous blood (10 mL) will be collected by a trained nurse. Participants must fast for 10–12 hours prior to blood draw. After standing at room temperature for 3–5 minutes, blood samples will be centrifuged at 3000 rpm for 10 minutes, and the plasma will be aliquoted into pre-labeled EP tubes and stored at −80°C for subsequent analysis.

Fecal Sample: Participants will collect stool samples using sterile cryotubes. The central

portion of the stool will be collected to avoid contamination by urine or toilet water. Samples from participants with diarrhea or loose stools will be excluded. Fecal samples will be transferred to a −80°C freezer within 1 hour of collection.

(2) Dietary Intake: Three-day dietary records will be completed before and after the intervention (including two weekdays and one weekend day), detailing all food and beverage consumption, including brand names where applicable. Standardized training and food atlas tools will be provided. Completed records will be reviewed daily by the research team, with missing or unclear entries clarified immediately.

4.6 Quality Control

To ensure data accuracy and reproducibility, the following quality control (QC) procedures will be implemented:

(1) Questionnaire QC: ①Use of validated and standardized instruments: WURSS-24, TNSS, and RQLQ (Chinese versions). ②All investigators will be trained in standardized administration, scoring, and interview techniques. ③Face-to-face completion or guided interviews will be used. ④All completed questionnaires will be double-checked within 24 hours by a second investigator to identify missing or inconsistent entries. Corrections will be made by contacting the relevant participant.

(2) Blood Samples: ①Fasting blood draws scheduled between 8:00–10:00 AM with prior notice and scheduling. ②Unique ID codes will be assigned to all samples, matched to participant IDs. ③Blood will be drawn by certified nurses using standard vacuum tubes: 5 mL in coagulation tubes and 5 mL in EDTA tubes. ④Plasma/serum will be aliquoted and stored at −80°C. Dry ice will be used for cold chain transport.

(3) Fecal Samples: ① Sterile collection kits with stabilization solution will be used. ② Samples will be delivered to −80°C storage within 4 hours or immediately stored on site. ③ Batch testing will be conducted to minimize inter-assay variability. ④ Sample coding and time-point tracking will be used for consistency.

(4) Data Entry: ① Double data entry will be performed in EpiData by two independent investigators. ② Logic checks will be applied to prevent entry errors. ③ Weekly backups will be maintained on encrypted servers and external drives. ④ Final datasets will be locked prior to statistical analysis and archived for audit

(5) Statistical Analysis: ① All analyses will be conducted using SAS software (version 9.4 or higher). ② Predefined variable libraries, missing data protocols, and sensitivity analyses will be applied. ③ All key results (e.g., effect sizes, p-values) will be double-verified by two statisticians. ④ The final analysis report will be prepared in accordance with CONSORT guidelines.

4.7 Management Policies

(1) Intervention Product Management: Intervention products will be centrally procured and labeled. Distribution will be logged with batch numbers, participant IDs, and intake schedules. Returned and unused products will be counted to ensure traceability.

(2) Participant Management: Participants will receive assigned IDs and follow-up schedules. Weekly reminders via phone or WeChat will ensure compliance. Missing ≥3 consecutive days of intake will be flagged as poor adherence. Reasons for withdrawal will be documented.

(3) Sample Management: All blood and fecal samples will be centrifuged or frozen within 2 hours and stored at −80°C. Samples are for this study only and will be managed in a coded and traceable system.

(4) Data Management: Data will be entered into an electronic case report form (eCRF), double-entered and validated. All data will be anonymized before analysis and retained for at least 5 years for audit purposes.

4.8 Post-Trial Participant Care

After trial completion, all participants will receive a free health follow-up, including blood routine tests and liver/kidney function assessments. Any abnormalities will be referred to outpatient care. Individual reports will be provided, and those in need will receive continued nutrition consultation services.

5 Risks and Benefits of the Study

There is no direct personal benefit to you from participating in this study. However, the data collected through your participation may provide valuable scientific evidence to support dietary recommendations regarding the use of prebiotics.

The collection of blood samples will be performed under strict aseptic conditions by qualified personnel. The amount of blood drawn is minimal and is not expected to cause any harm to your health. However, there may be some minor risks associated with blood collection, including brief pain at the needle site, mild bruising, and in rare cases, lightheadedness or dizziness.

6 Costs

All nutritional supplements and health assessments required for the study will be provided free of charge by the research team. At the conclusion of the study, participants will receive a financial compensation as a token of appreciation for their time and cooperation.

7 Compensation

In the unlikely event that you experience harm or injury as a result of participating in this study, you will be provided with appropriate medical treatment and/or financial compensation in accordance with ethical and legal standards.

8 Confidentiality of Participant Information

All personal information collected during the study will be kept strictly confidential. For example, your biological samples will be labeled with a numerical code rather than your name. Personally identifiable information will not be disclosed to anyone outside the research team unless you provide written permission to do so.

Informed Consent Form

Dear Participant,

You are invited to participate in a human intervention study conducted by the School of Public Health at Lanzhou University, entitled *"**Study of the Preventive Effects and Mechanisms of Yeast β-Glucan on Upper Respiratory Tract Infections**"*. This study has been reviewed and approved by the Ethics Committee of the School of Public Health, Lanzhou University, and complies with relevant ethical and scientific research standards. This informed consent form provides you with key information to help you decide whether to participate. Please read it carefully. If you have any questions, feel free to ask the study investigator.

Purpose of the Study

Upper respiratory tract infections (URTIs) are acute mucosal infections caused by pathogenic invasion of the respiratory mucosa, leading to disruption of the mucosal barrier, immune system activation, and inflammation. Clinical symptoms include nasal congestion, rhinorrhea, sore throat, cough, and hoarseness. Although URTIs are typically self-limiting, their high incidence, recurrence, and transmissibility—especially in dense environments such as schools and workplaces—make them a significant public health concern. Allergic rhinitis (AR) is a chronic upper airway inflammatory disease mediated by immunoglobulin E (IgE). Its classic symptoms include nasal itching, sneezing, clear nasal discharge, and congestion. AR patients are more susceptible to recurrent URTIs due to persistent inflammation of the nasal mucosa, impaired epithelial barrier, decreased ciliary function, and reduced local secretory IgA (sIgA) production. Moreover, AR often coincides seasonally with peak URTI incidence, increasing the overall burden of illness. Therefore, individuals with AR are considered a high-risk population for URTIs and are ideal subjects for evaluating preventive interventions.

Prebiotics are substrates selectively utilized by host microorganisms that confer health benefits, typically by modulating gut microbiota composition and/or activity. However, research on the role

of prebiotics in URTI prevention remains limited. Yeast β-glucan, a natural polysaccharide and commonly used prebiotic, has demonstrated multiple bioactivities, including immunomodulatory, anti-inflammatory, and gut microbiota-regulating effects. Studies suggest that yeast β-glucan can enhance immunity and reduce the duration and severity of cold and flu symptoms in healthy adults. However, its effects in AR populations remain uninvestigated.

This study aims to conduct a randomized, double-blind, placebo-controlled trial among university students with persistent AR symptoms to assess the preventive effect of yeast β-glucan against URTIs and to explore its potential mechanisms. The results are expected to provide scientific evidence for the use of postbiotics in high-risk populations for URTIs.

Study Procedures

If you agree to participate, you will be assigned a participant ID and randomly allocated to either the yeast β-glucan group or the control group. The total study duration is 15 weeks, including a 1-week run-in period, a 12-week intervention period, and a 2-week follow-up period. During the intervention, participants in the yeast β-glucan group will take two capsules daily after meals, while the control group will take two placebo capsules with identical appearance and packaging. At baseline and Week 12, you will complete nutritional and physical activity assessments, undergo physical examinations, and provide biological samples (blood and stool). Two weeks after the intervention, you will complete a questionnaire to track the incidence of URTIs. Blood samples (10 mL) will be drawn by trained nurses via venipuncture. Stool samples will be self-collected according to researcher instructions and handed over to the study team. All biological samples will be used exclusively for this study.

Potential Benefits

There are no direct benefits to you. However, you will receive free health assessments and intervention products, and your participation may help advance scientific knowledge on the prevention of URTIs and related diseases.

Risks and Discomforts

Blood sample collection will be performed under sterile conditions. Risks are minimal and may include slight pain, local bruising, or mild dizziness.

Confidentiality

All personal data and information collected during the study will be kept strictly confidential. Your samples and records will be labeled using numeric codes instead of your name. Personally identifiable information will not be shared outside the study team without your consent.

Costs

Yeast β-glucan supplements and health assessments will be provided free of charge. After the trial, the control group will also receive a free 12-week supply of the intervention product. Participants will receive a monetary compensation upon study completion.

Compensation

If you suffer injury or harm as a result of participating in this study, you will be entitled to free medical care and/or appropriate compensation.

Voluntary Participation and Right to Withdraw

Participation in this study is completely voluntary. You have the right to access information about the study at any time and may choose to withdraw at any point without providing a reason. Withdrawing from the study will not affect your access to medical services. If continuing participation poses a risk to your health, the investigator may decide to withdraw you from the study.

During your participation, we ask that you:

- Follow all study-related instructions.
- Respond truthfully to questions from the investigators.
- Inform the investigator of any discomfort or adverse symptoms.
- Avoid prohibited medications or substances.
- Provide accurate medical history and health information.
- Inform us of any recent or ongoing participation in other studies.

If you fail to follow the study protocol or experience study-related complications, the investigator may terminate your participation.

Contact Information

If you have questions about the study, experience discomfort or injury, or have concerns about your rights as a participant, please contact: [Professor/Dr.] – Phone: [****]

Consent Signature

I have read and understood the content of this informed consent form. The investigator [Signature] has explained to me the study's purpose, procedures, risks, and benefits in detail. My questions have been answered to my satisfaction. I voluntarily agree to participate in this study.

Participant Signature: _____ Date: _____ / _____ / _____

Investigator Signature:_____ Date: _____ / _____ / _____

Investigator Contact Number: _____