Rosen College of Hospitality Management
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Viability of Pleurotus ostreatus Growth in Microgravity

Student Spaceflight Experiments Program (SSEP) Mission 21 – University of Central Florida Rosen College of Hospitality Management

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Background

Fungi are useful for research because they adapt easily and need little care. The oyster mushroom, *Pleurotus ostreatus*, can turn plant waste into energy and grow on simple materials. Studying it in space helps scientists see how gravity affects growth and structure, offering insight into how living systems behave in microgravity.

Significance

If *P. ostreatus* can grow in space, it could help provide food and recycle waste on long missions. This research supports future space farming and sustainable life-support systems while simultaneously deepening our understanding of how organisms adapt without gravity.

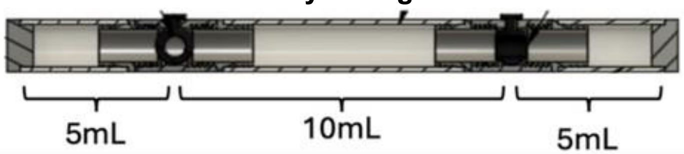
Research Question:
Can *P. ostreatus* grow and develop viable mycelial structures under microgravity conditions aboard the International Space Station (ISS)?

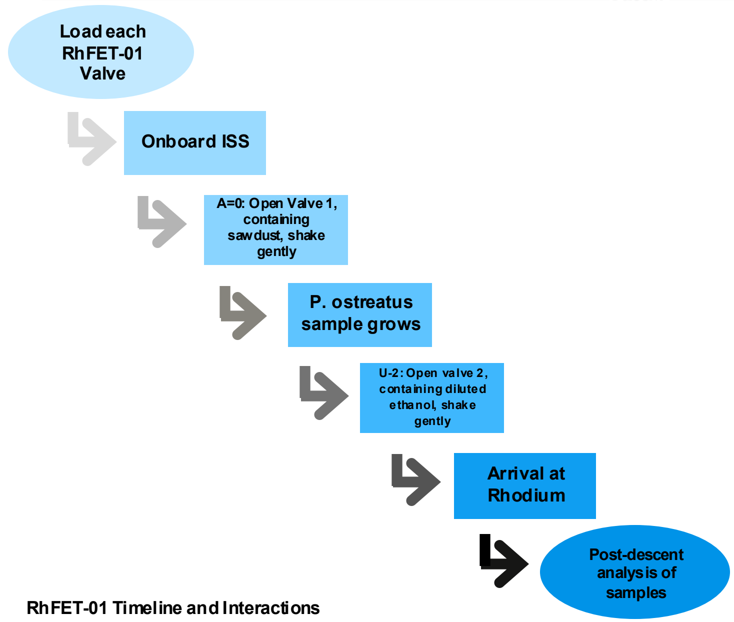
Methods

Tube Type: MixStix (3 chambers, 2 clamps; volume ~20mL)
Valve 1: 1mL sawdust slurry
Valve 2: 0.2mL malt extract broth, 5mL mycelium agar slurry, mixed
Valve 3: 5 mL of diluted ethanol solution (20 %)

Allowed Interaction Day	Proposed Crew Interactions and Modifiers
A=0	Open valve 1 – shake gently for 60 seconds
A+2	N/A
U-14	N/A
U-5	N/A
U-2	Open valve 2 – shake gently for 30 seconds

Rhodium Fluid Experiment Tube (RhFET-01) Mini-Laboratory Configuration





RhFET-01 Timeline and Interactions

Expected Outcome and Analysis

The ethanol content involved in this experiment intends to yield a non-toxic, low-strength growth inhibitor, 'fixing' the *P. ostreatus*. With this fix, post-descent analysis of the samples will be conducted using a standard light microscope and staining techniques to examine differences between the specimens.

The main components that will be analyzed are their growth patterns and overall ability to thrive given the microgravitional conditions.

Conclusion

P. ostreatus has the potential to grow in microgravitational conditions in space. The usage of ethanol intends to 'fix' the results on its descent back to Earth for analysis of its progression in space. In doing so, results could aid in further research for food supply in sustainable space applications.

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