GINGER FOR MANAGEMENT OF AIR SICKNESS

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PLAN

• Introduction
• Need for the study
• Aim
• Methodology
• Results
• Discussion
• Conclusion
• Recommendations
INTRODUCTION

DOES THIS MEAN I CAN HAVE YOUR PEANUTS?
INTRODUCTION

• Air Sickness: Common problem affecting aircrew & passengers

• Variant of motion sickness

• Provoked by unfamiliar motion environment of flight

• Trainee pilots commonly affected
INTRODUCTION

• 30 – 40% become airsick during 1st air experience

• Majority adapt adequately (3rd / 4th sortie)

• Managed by pharmacological & non pharmacological methods

• Most medications not usable in pilots
INTRODUCTION

• New approach towards prevention & management

• *Zingiber officinale* (ginger root) with :-
  - Physical Exercise Therapy (PET)
  - Progressive Muscle Relaxation (PMR)
NEED FOR THE STUDY

- Ginger: Extensive use in traditional Indian & Chinese systems of medicine
- Anti-emetic effects: Aromatic, carminative & absorbent properties
- Direct effect on GI tract
- Scant literature on use of ginger in air sickness
AIM

To assess the effectiveness of orally administered ginger root powder as an adjunct to Air Sickness Desensitisation Therapy (ASDT)
METHODOLOGY

• Study conducted at Aeromedical Training Centre of IAF (18 months)

• Subjects: Under-training pilots referred for airsickness desensitisation

• 21 age matched males (n = 21)

• Test group (n = 11) & Control group (n = 10)
METHODOLOGY

- Air sickness desensitisation protocol:
  - Yogic exercises
  - PET
  - PMR
  - Exposure to provocative stimulus (Barany Chair)

- 1g ginger root powder mixed with pulverised glucose 4h before exposure
METHODOLOGY

• Controls given only pulverised glucose

• 10 yogic exercises known to stabilise the vestibular system

• Allay anxiety, modulate ANS, enhance focus

• 20 minutes of PET (Set of 4 exercises) followed by PMR
METHODOLOGY

• Subjective response to each provocative motion exposure assessed

• Motion Sickness Assessment Questionnaire (MSAQ)
  - GI
  - Central
  - Peripheral
  - Sopite-related
  - Overall scores
## PROTOCOL

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<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
<th>DAY 4</th>
<th>DAY 5</th>
<th>DAY 6</th>
<th>DAY 7</th>
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<td>CCW</td>
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**CW** – Clockwise  
**CCW** – Counter Clockwise
METHODOLOGY

- ANOVA
- General linear model
- Overall MSAQ scores analysed for:-
  - Interaction effects between the three independent variables
  - Effect on dependent variable
RESULTS

• No significant interaction effect between
  – Time (↑RPM)
  – Ginger / No Ginger
  – Time of day/ direction of rotation
RESULTS

- Effect of Time
- MSAQ expected to ↑ with increasing provocation
- However, no significant effect of time on MSAQ scores (↑ RPM)
  - $F = 1.470; p = 0.172$
- ASDT alone is effective in air sickness desensitization
RESULTS

• Effect of Morning/ Evening & clockwise / anticlockwise rotation

• There was no significant effect of the direction of rotation / time of day

• $F = 0.968 ; p = 0.338$
RESULTS

• Effect of Ginger

• The MSAQ changed significantly in the test subjects as compared to controls

• $F = 6.6 ; p = 0.019$
RESULTS

CLOCKWISE

![CLOCKWISE Graph](image)

COUNTER-CLOCKWISE

![COUNTER-CLOCKWISE Graph](image)
DISCUSSION

• Gingerol – 6: Active ingredient of ginger

• Also responsible for characteristic taste

• Exact mechanism of action unclear

• No significant adverse effects
DISCUSSION

• Orally administered ginger root powder found to effectively ↓ severity of air sickness

• Results in agreement with some earlier studies

• Effective adjunct to ASDT

• Can be used safely by aircrew & passengers
CONCLUSION

• Airsickness: Direct ramifications on flight safety & mission effectiveness

• Orally administered ginger root powder safe remedy

• Can be introduced as an adjunct to ASDT
THANK YOU!