The Ultimate Culinary Space Experience

Delivering hedonic pleasure in the form of high performance food for the health and nutrition of an astronaut

By Shahreen Reza
Hedonics

Hedonics is the branch of psychology dealing with pleasant and unpleasant feelings.

Hedonic benefits focus on the pleasure gleaned from the experience of eating good food.

Since Aristotle, happiness has been usefully thought of as consisting of at least two aspects: hedonia (pleasure) and eudaimonia (a life well lived).
Why is pleasurable food experiences in space even important?

A high-functioning astronaut needs high-performance food to fuel them.

1. Psychological well-being and camaraderie are benefits of eating food together as a crew.

2. The politics and cultural bridge that food allows us to cross.

3. The French philosophy
   The French Space Agency is looking into cooking in space

   Placing an importance in the aesthetics of food enhances multisensory pleasure of eating.
FLAVOR

“Psychologists and neuroscientists tell us that flavour is a concoction of the brain”

- Prof. Barry Smith

Flavor is not what is happening in the mouth.

Oral referral makes us think it is happening in the mouth, but it is actually happening in the brain.
How to define flavour

The Fundamentals about Flavour:

- The only human experience that engages with all the senses.
- There is a dominant role of olfaction (retronasal and orthonasal).
- Importance of audition - there is a modulatory role of sound (e.g., certain sounds affect taste and olfactory perception, noise impairs our ability to taste).
- Expectations anchor the experience, and affect our opinions of what we experience.
- We eat with our eyes. Visual perception, and in particular colour, has a big impact on taste perception, food choice, and value perception.
- Important role of trigeminal stimulation (e.g. pungency, carbonation, certain foods such as wasabi, mustard,...).
- Important role of touch - in mouth, and in hands + body.
- Important role of past experience and memory.
There's more to flavour

**Powerful memories** can be elicited through smell/flavour

Part of our flavour preferences are *learned* (cultural), others are *genetic* (taster status)
According to JAXA: Living is eating, whether on Earth or in outer space.
The French Perspective

CNES has provided cultural influence on the ISS through food

- A focus on flavour as opposed to function
- Cans over pouches to see the food with our eyes
UMAMI: the taste of Deliciousness.


There is more to taste: KOKUMI.

Fatty acids ... more to come!
Science is a baby in this aspect.
Ever drank tomato juice in the air?

It’s not your imagination; tomato juice does taste different on an airplane.
Sensory perception of smell and taste has been known to change in microgravity.
Food Aesthetics: Olfaction

The dominant flavour sense.
It is frequently asserted that somewhere between 75 and 95% of what we commonly think of as taste actually comes from the sense of smell.

Most researchers would appear to agree that olfaction plays a “dominant” role in the tasting of food.
Trigeminal stimulation

SPICY
SOOLING
WARMING
Food Aesthetics: 

**TEXTURE**

Creating the crunch that astronauts crave while addressing the micronutrient deficiency!
Astreas
NooSphere

100% RDA of key micronutrients and neuroenhancers

Vitamin D3, K2 & C
Strengthens bones and maintains calcium homeostasis

Choline
Improves memory & focus

Lion's Mane Mushroom
Stimulates neurogenesis

Magnesium Chelate
The highest form of magnesium with 50% more absorption for heart health and brain health, boost in energy

Chromium
Improves exercise performance and reduces insulin resistance, this modulates the blood glucose level

Vitamins B6 & B12
B vitamins have a direct impact on energy levels, brain function, and cell metabolism
Astreas
Energy Sphere

CDP Choline
Focus & memory

Caffeine
Energy

L-Theanine from tea
Provides a sense of “calming” to balance out the stimulation brought on by caffeine
We don’t talk very much about how to prepare food but that is as big of a challenge as the production.

People who are going to Mars will have free time on their hands.

STAY TUNED!
THANK YOU