आईएफटीएम विश्वविद्यालय, मुरादाबाद, उत्तर प्रदेश

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IFTM University, Moradabad

Good morning

Edible toothpaste

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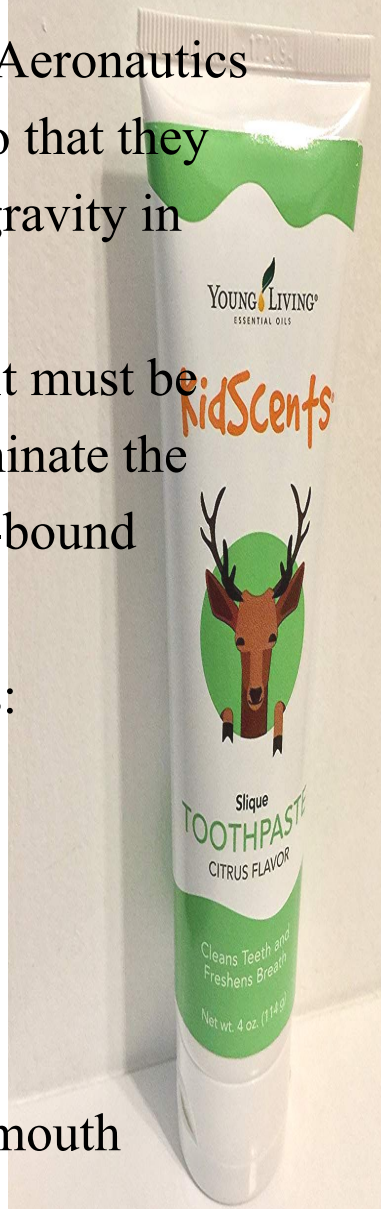
Introduction

- The first edible tooth paste was developed by the National Aeronautics and Space Administration (NASA) in1987 for astronauts so that they could brush their teeth without spitting since there is zero gravity in space.
- The principal characteristic of an edible tooth paste is that it must be harmless to consumers if swallowed; suitable for kids; eliminate the formation of air bubbles and, therefore, can be used in bed-bound patients.
- Other important characteristic of these toothpastes includes:

- Must be able to prevent malodour for more than 5 hrs
- Prevent and treat tartar
- Able to remove stained plaque
- Relieve dentin hypersensitivity
- stimulate salivary secretion especially for people with dry mouth



Constituents of conventional toothpastes and their health hazards

- The main categories of substances used in the formulation of conventional toothpaste are abrasives, detergents, essential oils (EL), artificial flavors (EFL), propylene glycol (PG), preservatives, coloring agents; herbal extracts fluoride salts, and flavorings.
- Majority of these constituents can cause contact dermatitis of the mouth. Symptoms of contact dermatitis may include sores in the mouth, swollen gums, an irritated tongue, and itching and peeling of the lips and skin around the mouth.
- The most common **flavorings that are frequently responsible for toothpaste allergies** are cinnamal, spearmint, peppermint, carvone, and anethole. Because most toothpaste is flavored with either a variation of mint or cinnamon, it can be challenging to find toothpaste free of these flavors for those who have an allergy.

- The second most commonly present allergen in conventional toothpaste is **synthetic surfactants such Sodium lauryl Sulphate, cocamidopropyl betaine (CAPB)** etc. In our country almost all tooth pastes contains synthetic surfactants.
- The third most common allergen is **propylene glycol**, a water-soluble vehicle.
- Parabens are commonly used as **preservatives** in toothpastes. Parabens are the fifth most common allergen overall. Toothpastes containing herbal extracts like Meswak or Miswak have the potential to cause serious mouth allergy as these extracts contain benzyl isothiocyanate, which is a known contact allergen.

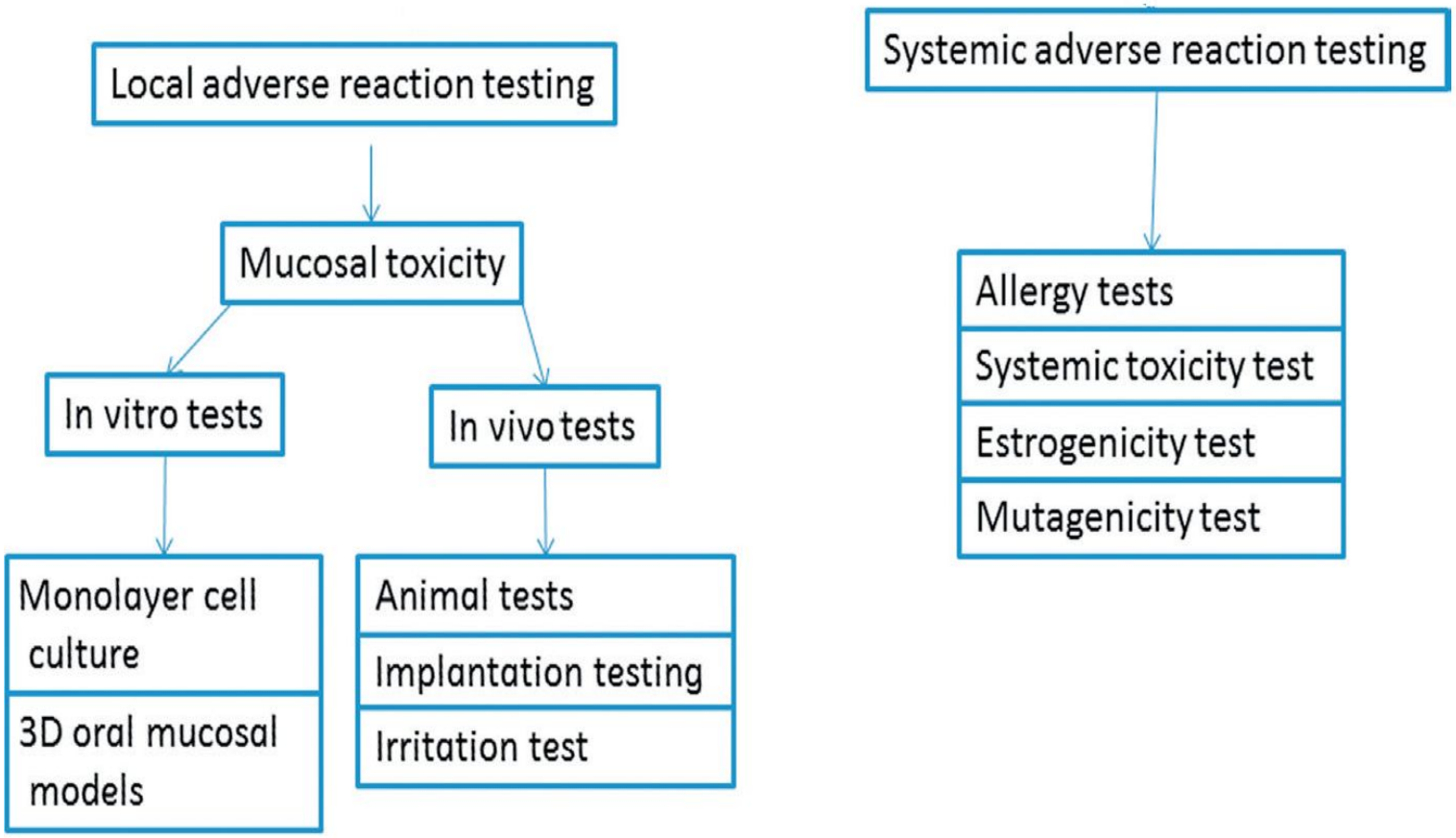
- **Many toothpastes nowadays contain Propolis as antifungal, antimicrobial,** astringent, anti-inflammatory and anesthetic properties**.** The ingestion of Propolis can also have deleterious effects resulting in allergic contact cheilitis, stomatitis, perioral eczema, labial edema, oral pain, and dyspnea.
- In patients investigated for cheilitis (inflammation of the lips), probably the most frequent symptom of toothpaste allergy, the frequency of allergic reactions to toothpaste has ranged from 0% to 47%. The best way to treat toothpaste allergy is to avoid the chemical that is resulting in the allergy.

Presence of allergens in toothpastes available in market

ALLERGEN	NUMBER OF PRODUCTS CONTAINING ALLERGEN	PERCENT OF PRODUCTS CONTAINING ALLERGEN
EFL (Flavors, unspeficied)	75/80	93%
CPB (Cocamidopropyl betaine)	16/80	20%
PG (Propylene glycol)	8/80	10%
E (Essential oils and biological additives)	5/80	6%
P (Parabens)	5/80	6%
PPM (Peppermint)	4/80	5%
VE (Vitamin E)	2/80	2%
SPM (Spearmint)	2/80	2%
GRX (Grape extract)	1/80	1%
SF (Specific flavors)	1/80	1%
PR (Propolis)	1/80	1%
TT (Tea Tree Oil)	1/80	1%

Material and method

- **Materials:** Natural abrasives, natural sweeteners, natural surfactants, vegetable oils, hypoallergenic natural actives, herbal extracts etc.
- **Methods:** In vitro tests are carried out outside of the body. Their objective is to simulate biological reactions to oral care products when they are placed on or into tissue of the body. The in vitro tests are suitable for screening new oral care products compared with time-consuming and expensive animal studies.


Local adverse reaction testing
Mucosal toxicity
In vitro tests
In vivo tests
Monolayer cell culture
3D oral mucosal models
Animal tests
Implantation testing
Irritation test
Systemic adverse reaction testing
Allergy tests
Systemic toxicity test
Estrogenicity test
Mutagenicity test

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THANK
YOU!