



Dr. BRR. GOVERNMENT COLLEGE,
JADCHERLA, MAHABUBNAGAR (Dist.)

Student Study Project
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DEPARTMENT OF CHEMISTRY

Topic

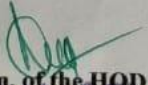
DETERMINATION OF CONTENTS OF TOOTH POWDER

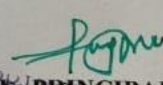
Conducted by students

Name of the Student	Hall Ticket No.	Course
TINGIRIKARI MAHESHWARI	20033006441056	MPC EM II Year
PATHLAVATH SHIRISHA	20033006441044	MPC EM II Year
SABAVATH SANTOSH	20033006441051	MPC EM II Year
Y ANUSHA	20033006441059	MPC EM II Year
PALADI LOKESH KUMAR	20033006441043	MPC EM II Year
SABHAVAT NIRMALA	20033006441052	MPC EM II Year

Guided By
Sri N. Sai Kondalu
Asst. Prof. of Chemistry


Sign. of the Lecturer


Sign. of the HOD
I/C Dept of Chemistry
Dr. BRR Govt. Degree Coll.
JADCHERLA.


Sign. of the PRINCIPAL
Dr. BRR Govt. College
Jadcherla-508 301

Introduction:

Aim is to find the Determination of Contents of Tooth Powder/To test the acid and basic radicals in the toothpowder

Toothpowder is a powder used with hands or with a toothbrush to clean and maintain the aesthetics and health of teeth. Toothpowder is used to promote oral hygiene: it can aid in the removal of dental plaque and food from the teeth, aid in the elimination and/or masking of halitosis and deliver active ingredients such as fluoride or xylitol to prevent tooth and gum disease.

Theory

While the exact formula of each brand of toothpaste is proprietary, most toothpowders contain the same basic ingredients. These include:

Fluoride: Perhaps the most important toothpowders ingredient is fluoride. Fluoride incorporates itself into tooth enamel making your teeth more resistant to acids produced by plaque bacteria, as well as acids found in fruit juices, soda (both regular and diet) and certain foods. In toothpowders, fluoride is found in the form of sodium monofluorophosphate, stannous fluoride, or sodium fluoride.

Abrasives: Abrasives give toothpowders its cleaning power. They remove stains and plaque, as well as polish teeth. Common abrasives include calcium phosphates, alumina, calcium carbonate, and silica. Toothpowders should be abrasive enough to remove plaque and stains, but not abrasive enough to damage tooth enamel. Damaged tooth enamel also causes yellowing as the thinned enamel reveals the yellowish dentin layer below. Over the years, manufacturers have been quietly reducing the abrasiveness of their toothpowders.

Preservatives: Preservatives prevent the growth of microorganisms in toothpowders and

eliminate the need to refrigerate toothpowders. Common preservatives include sodium benzoate, methyl paraben, and ethyl paraben.

Flavoring Agents: These are added to improve the taste of toothpowders. You may have noticed that toothpowders have very strong flavoring. This is necessary to cover up the horrid taste of most detergents, especially SLS.

Sweeteners: Sweeteners also improve the taste of toothpowders. Most toothpowder sweeteners are artificial and contribute very little to cavity formation. Saccharin is a common toothpowder sweetener.

TEST FOR ACID RADICAL I:

EXPERIMENT	OBSERVATION	INTERFERENCE
[A] Dilute H ₂ SO ₄ Test Treat the given sample of tooth powder with dilute H ₂ SO ₄	Colourless, Odorless gas evolved with brisk effervescences which turns lime water milky	May be CO ₃ ⁻²
[B] Conformity test for CO ₃ ⁻² (i) MgSO ₄ test To the aq. Solution add MgSO ₄ solution.	White ppt formed	CO ₃ ⁻² conformed
(ii) Dilute HCl test To the aq. Solution add dilute HCl	Colourless, Odour less gas evolved	CO ₃ ⁻² conformed

TEST FOR ACID RADICAL II

EXPERIMENT	OBSERVATION	INTERFERENCE
[A] Dilute H ₂ SO ₄ Test	No gas evolved	

Treat the given salt with dilute

H₂SO₄

[B] Concentrated H₂SO₄ test

Heat the given sample with
Conc. H₂SO₄

No gas evolved

[C] Test for PO₄⁻³

To the aq. Solution add few
drops of ammonium
molybdate.

Deep yellow ppt formed

PO₄⁻³ conformed

TEST FOR BASIC RADICAL

Experiment	Observations	Inference
[A] Test for zero group: To the given sample add NaOH.	No ammonical smell.	Zero group absent.
[B] Test for I group: To the aq. Solution of sample, add dilute HCl.	No ppt. formed.	I group absent.
[C] Test for II group: To the above solution, pass H ₂ S gas.	No ppt. formed.	II group absent.
[D] Test for III group: To the aq. Solution of toothpowder add NH ₄ Cl followed by NH ₄ OH.	No ppt. formed.	III group absent.
[E] Test for IV group: To the above formed solution pass H ₂ S gas.	No ppt. formed.	IV group absent.
[F] Test for V group: To the aq. Solution of toothpowder add solid NH ₄ Cl, NH ₄ OH and (NH ₄) ₂ CO ₃ .	White ppt. formed.	V group present.

Result:

The given toothpowder contains anions namely CO₃²⁻ and PO₄³⁻ and cations namely Ca²⁺.

Conclusion

Several of the ingredients in toothpastes are found by some environmentally damaging or hazardous to the personal health.

These ingredients include:

Artificial flavoring

- Artificial colors
- Triclosan
- Sodium bicarbonate (baking soda)
- Detergents
- Fluoride
- Preservatives such as Methylparaben and Ethylparaben-parabens
- Pyrophosphate

Homemade tooth powders are made by mixing 3 parts baking soda (cleanser) thoroughly with 1 part salt (the abrasive). As a direct result of these concerns, some people have started making

their own tooth paste instead, which -while still not completely ecologic due to the use of baking soda- still eliminates much environmentally or health damaging ingredients. Also, commercial toothpowders are made which are less or even non-environmentally damaging. Such preparations are made from herbal resins, propolis and myrrh.