

Introduction to investigation: Background to aroma chemicals

Information - *Known*

Information - *Unknown*

Basic properties of aroma chemicals
Relationship between taste and smell

Detailed structures / properties of aroma chemicals
Nature of problem of manufacturer of chewing gum

Session 1 activity

Discussion of names, structures and properties of flavourings
Discussion of possible solutions to the chewing gum 'problem'

More advanced knowledge of aroma chemicals
Background to the chewing gum problem
Samples of gum/flavourings available for analysis

Nature of the problem:
Is there contamination from other flavourings?
Does the gum have the wrong quantity of flavouring?

Session 2 pre-lab

Investigate extraction methods and use of Internal Standard
Determine structures/properties of selected aroma chemicals

Session 2 activity

Soxhlet extraction of chewing gum (with Internal Standard)
Model building

Aroma chemicals extracted (differences noted)
Extract contains more than just aroma chemicals

Composition of extract
Contamination or incorrect abundance of flavouring?

Session 3 pre-lab

Investigate purification techniques
Calculate molecular mass of chemicals as background to MS

Session 3 activity

Purify extract by column chromatography
Consider extraction/methods and perform procedural blank

Extract purified (differences noted)
Quantification of purification/detection established

Composition of extract
Contamination or incorrect abundance of flavouring?

Session 4 pre-lab

Investigate purification techniques
Calculate molecular mass of chemicals as background to MS

Session 4 activity

Analyse purified extracts by GC with FID or MS detection
Determine identity / concentrations of aroma chemicals

Conclusion

Problem gum contaminated with S-carvone (wrong isomer)

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