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1.3.1 Isolates; 1.3.2 Biotechnology; 1.3.3 'Soft Chemistry'

1.4 Fragrance Aroma Chemicals 1.4.1 Musks; 1.4.2 Amber; 1.4.3 Florals; 1.4.4 'Woodies'; 1.4.5 Acetals and Nitriles; 1.5 Materials of Natural Origin; 1.5.1 Essential Oils; 1.5.1.1 Cold-pressing - Citrus Oils; 1.5.1.2 Steam-distilled Oils; 1.5.1.3 A Note on 'Adulteration'; 1.5.2 Absolutes and Other Extracts; Acknowledgments; References; 2 Sample Preparation; 2.1 Introduction; 2.2 PDMS; 2.3 Static Headspace Extraction; 2.3.1 Advantages and Disadvantages; 2.4 Dynamic Headspace Extraction; 2.4.1 Advantages; 2.4.2 Disadvantages; 2.5 Solid Phase Microextraction (SPME); 2.5.1 Research; 2.5.2 Practical 2.5.3 Advantages 2.5.4 Disadvantages; 2.6 Stir Bar Sorptive Extraction; 2.6.1 Research; 2.6.2 Practical; 2.6.3 Advantages; 2.6.4 Disadvantages; 2.7 PDMS Foam and Microvial; 2.7.1 PDMS Foam; 2.7.2 Microvial; 2.8 Solvent Extraction; 2.8.1 MIXXOR; 2.8.2 Soxhlet Extraction; 2.8.3 Solvent Assisted Flavor Evaporation (SAFE); 2.9 Summary; References; 3 Traditional Flavor and Fragrance Analysis of Raw Materials and Finished Products; 3.1 Overview; 3.2 Physical Attribute Evaluation; 3.2.1 Color - Optical Methods; 3.2.2 Turbidity; 3.2.3 Water Activity; 3.2.4 Moisture Content; 3.2.4.1 Karl Fischer Method 3.2.4.2 Secondary Moisture Determination Methods 3.2.5 Optical Rotation; 3.2.6 Specific Gravity; 3.2.7 Refractive Index; 3.2.8 Sugars/Soluble Solids; 3.2.9 Viscosity; 3.3 Instrumental Analysis; 3.3.1 Separation Techniques; 3.3.1.1 Gas Chromatography (GC); 3.3.1.2 GC Retention Data; 3.3.1.3 Standardized Retention Index Systems; 3.3.1.4 GC Injection; 3.3.1.5 GC Columns (Stationary Phases); 3.3.1.6 GC Detectors; 3.3.2 Identification Techniques; 3.3.2.1 Retention Index Approach; 3.3.2.2 GC-MS; 3.3.2.3 MS/MS; References; 4 Gas Chromatography/Olfactometry (GC/O); 4.1 Introduction 4.2 Odor Assessors' Selection and Training 4.3 Sensory Vocabulary; 4.4 GC/Olfactometers (Sniffers); 4.5 Practical Considerations; 4.6 Types of GC/Olfactometry; 4.6.1 Dilution Analysis; 4.6.2 Time Intensity; 4.6.3 Detection Frequency; 4.6.4 Posterior Intensity Method; 4.7 Sample Introduction; 4.8 Identification of Aroma-active Peaks; 4.8.1 Standardized Retention Index Values; 4.8.2 Aroma Description Matching; 4.8.3 MS Identifications; 4.8.4 Use of Authentic Standards; 4.9 Conclusion; References; 5 Multivariate Techniques; 5.1 Introduction; 5.2 Hierarchical Cluster Analysis (HCA) 5.3 Principal Component Analysis (PCA)

Sommario/riassunto

Modern flavours and fragrances are complex formulated products containing blends of aroma compounds with auxiliary materials, enabling desirable flavours or fragrances to be added to a huge range of products. The flavour and fragrance industry is a key part of the worldwide specialty chemicals industry, yet most technical recruits have minimal exposure to flavours and fragrances before recruitment. The analytical chemistry of flavour and fragrance materials presents specific challenges to the analytical chemist, as most of the chemicals involved are highly volatile, present in very small amount