Handbook of Industrial Seasonings
Handbook of Industrial Seasonings

Edited by

E.W. UNDERRINER
McCormick & Co. Inc.
Maryland
USA

and

I.R. HUME
South West Water
Cornwall
UK

SPRINGER-SCIENCE+BUSINESS MEDIA, B.V.
Preface

This book is targeted at all those involved with seasonings and flavourings in the food industry and has relevant appeal for technical, purchasing, development, production and marketing staff in seasoning and ingredient companies as well as food manufacturers. It also provides useful general technical information for those involved in purchasing and product development in the retail trade.

A general background to the seasoning industry is complemented by an in depth review of all the different ingredients and flavourings (natural and artificial) used in seasonings, their selection and quality.

A practical approach to seasoning formulation and specification is illustrated by typical seasoning formulations. Formulation strategy is discussed in relation to the final product benefits and limitations, including quality aspects, which are available from different types of ingredients and how they are utilised, with an overall objective of guiding the reader to develop seasonings and flavourings which accurately meet all the final product needs.

Uniquely, guidelines are discussed which should help foster improved customer/supplier relationships by the generation of accurate seasoning specifications defining final product needs and process constraints plus the evaluation and selection of seasoning suppliers who can most accurately meet the specification to give optimal product development (including cost constraints).
Contents

1 Introduction 1

E.W. UNDERRINER

1.1 The concept of seasoning 1

1.1.1 Early uses of spices and herbs as seasonings 1

1.1.2 Definitions of spices, herbs and seasonings 2

1.1.3 Concept of industrial blends 3

1.2 Consumer trends 6

1.2.1 Retail trends 6

1.2.2 Industrial and catering trends 8

1.3 The ethnic food explosion 9

1.3.1 Cultural impact on cuisine 9

1.3.2 Market response 10

1.4 Consumer expectations 10

1.4.1 ‘Natural’ 11

1.4.2 Consistency (sensory attributes) 12

1.5 Food processor (industrial) expectations 13

1.5.1 Ingredient reduction programmes 13

1.5.2 Increased brand globalization 14

1.5.3 Legislative trends 15

1.6 Conclusion 18

References 19

Further reading 19

2 Seasoning ingredients 20

O.P. HANAS

2.1 Introduction 20

2.2 Flavorings and flavors 21

2.2.1 Herbs and spices 21

2.2.2 Onion and garlic 21

2.2.3 Peppers 22

2.2.4 Natural flavors 23

2.2.5 Flavors made by processing 25

2.2.6 Artificial flavors 27

2.2.7 Flavor systems of the future 28

2.3 Flavor enhancers 29

2.3.1 Salt 29

2.3.2 Monosodium glutamate and nucleotides 29

2.4 Colorings 30

2.4.1 Natural colors 30

2.4.2 Artificial colors 32

2.5 Additives 32

2.5.1 Introduction 32

2.5.2 Bulking agents 32

2.5.3 Antioxidants 33

2.5.4 Preservatives 35

2.5.5 Anticaking agents 36

2.5.6 Stabilizers 36
2.5.7 Sweeteners 39
2.5.8 Other additives 40
Further reading 41

3 Herbs and spices 43
M.W. CLARKE
3.1 Introduction 43
3.2 What is a spice? 43
3.3 Origins of herbs and spices 43
3.4 Purchasing herbs and spices 44
3.5 Storage and shelf-life 44
3.6 Use of spices 44
3.7 Forms of spices 44
3.8 Herb harvesting and drying 45
3.9 Herbs and spices 45
3.9.1 Allspice 45
3.9.2 Aniseed 46
3.9.3 Basil 46
3.9.4 Bay leaves 46
3.9.5 Caraway seed 47
3.9.6 Cardamom 47
3.9.7 Celery seed 47
3.9.8 Chervil 48
3.9.9 Chillies 48
3.9.10 Chili powder 49
3.9.11 Chives 49
3.9.12 Cinnamon and cassia 49
3.9.13 Cloves 50
3.9.14 Coriander 51
3.9.15 Cumin seed 51
3.9.16 Dill 51
3.9.17 Fennel seed 52
3.9.18 Fenugreek 52
3.9.19 Ginger 52
3.9.20 Horseradish 52
3.9.21 Marjoram 53
3.9.22 Mint 53
3.9.23 Mustard seed 53
3.9.24 Nutmeg and mace 54
3.9.25 Onion and garlic 55
3.9.26 Oregano 55
3.9.27 Paprika 56
3.9.28 Parsley 56
3.9.29 Pepper 56
3.9.30 Poppy seed 57
3.9.31 Rosemary 58
3.9.32 Saffron 58
3.9.33 Sage 58
3.9.34 Savory 58
3.9.35 Sesame seed 59
3.9.36 Star anise 59
3.9.37 Tarragon 59
3.9.38 Thyme 59
3.9.39 Turmeric 60
3.9.40 Vanilla 60
3.10 Summary 61
4 Typical seasoning formulations

J.E. IVORY

4.1 Introduction 62

4.2 Standardization and measurement 62

4.2.1 Organoleptic properties 62

4.2.2 Color 63

4.2.3 Physical properties 64

4.2.4 Microbiological analyses 65

4.3 Shelf-life 66

4.4 Typical formulations 66

4.4.1 Curry powder 66

4.4.2 Hot (Madras) curry powder 67

4.4.3 Pork sausage seasoning 67

4.4.4 Lemon pepper marinade 67

4.4.5 Fajita marinade 68

4.4.6 Cheese sauce mix 68

4.4.7 White sauce mix 69

4.4.8 Barbecue sauce seasoning mix 69

4.4.9 Taco sauce mix 70

4.4.10 Spaghetti sauce seasoning mix 70

4.4.11 Brown gravy mix 71

4.4.12 Chicken gravy mix 71

4.4.13 Batters and b readings 72

4.4.14 Salty snack seasonings 76

4.5 Conclusion 79

5 Specifying a seasoning

J. LEE

5.1 Introduction 80

5.2 Variables 82

5.2.1 General description 82

5.2.2 Timescale 83

5.2.3 Cost and volume projections 86

5.2.4 Process requirements 89

5.2.5 Microbiological standards 90

5.2.6 Physical and chemical functions 93

5.2.7 Aroma and taste 94

5.2.8 Ingredient origins and restrictions 96

5.2.9 Shelf-life 97

5.2.10 Packaging 98

5.3 Exclusivity and confidentiality 102

5.4 Specification documentation 104

5.5 Summary 106

6 Selecting a seasoning supplier

I.R. HUME

6.1 Introduction 107

6.2 Evaluation of customer needs 107

6.2.1 Introduction 107

6.2.2 Development of new product concepts 108

6.2.3 Definition of taste requirements 109

6.2.4 R&D requirements 110

6.2.5 Process duplication equipment requirements 110

6.2.6 The intangibles 111

6.3 Assessing the supplier 112

6.3.1 Introduction 112
6.3.2 Supplier background 112
6.3.3 Production capacity 112
6.3.4 Factory hygiene 113
6.3.5 QA and QC procedures 113
6.3.6 QA facilities (microbiological, analytical) 113
6.3.7 R&D capacity and expertise 114
6.3.8 Ingredient evaluation programmes 114
6.3.9 Product guarantees 115
6.3.10 Order quantities and floorstock policy 116
6.3.11 Recall procedures 116
6.3.12 Evaluation documentation 117
6.4 Single or multiple sourcing 117
6.5 Requirements for a successful relationship between seasoner and customer 118

7 Ingredient hygiene and safety: quality management systems 119

A. PIMM
7.1 Introduction 119
7.2 Natural product defects 119
  7.2.1 Microbiological defects 120
  7.2.2 Contamination 121
7.3 Production, processing or deliberately caused defects 123
  7.3.1 Pesticides 123
  7.3.2 Solvent residues 125
  7.3.3 Adulteration 126
7.4 Microbiological and fumigation treatments 127
  7.4.1 Introduction 127
  7.4.2 Gas treatments 127
  7.4.3 Controlled atmosphere 129
  7.4.4 Irradiation 129
  7.4.5 Steam treatment 131
  7.4.6 Alternative methods 132
7.5 Test methods 134
  7.5.1 Introduction and sampling schemes 134
  7.5.2 Microbiological test methods 136
  7.5.3 Pesticide test methods 138
  7.5.4 Heavy metal analysis 141
  7.5.5 Chemical analysis 142
  7.5.6 Product contamination/adulteration evaluation 143
7.6 Regulatory issues 144
  7.6.1 Food safety regulations and consumer protection laws 144
7.7 Quality management systems 146
  7.7.1 ISO 9000/BS 5750/EN 29000 147
  7.7.2 Hazard analysis and critical control points (HACCP) 148
  7.7.3 Additional management systems: BS 7750 environmental management system 150
  7.7.4 Total quality management (TQM) 150
7.8 Summary 151
References 151

Index 155
Contributors

M.W. Clarke  Director of Purchasing, McCormick (UK) Plc, Castle House, Desborough Road, High Wycombe, Bucks, HP11 2HS, UK

O.P. Hanas  Manager, Product Development – Condiments, McCormick Flavor Division, McCormick & Co. Inc., 204 Wight Avenue, Hunt Valley, Maryland 21031, USA

I.R. Hume  General Manager, Cornwall Division, South West Water, Dowrglann, Stennack Road, Holmbush Industrial Estate, St Austell, Cornwall PL25 3SW, UK

J.E. Ivory  President, Atlantic Food Ingredients, 5075 Lake Circle West, Columbia, Maryland 21044, USA

J. Lee  Consultant, Wessington House, The Green, Wessington, Derbyshire, DE55 6DQ, UK

A. Pimm  1 Croft Close, Rowton, Chester CH3 7QQ, UK

E.W. Underriner  Director, Commercialization of New Products, McCormick & Co. Inc., P.O. Box 6000, Sparks, Maryland 21152, USA