

1. Record Nr.	UNINA9910877499303321
Titolo	Risk assessment of phytochemicals in food : novel approaches : symposium // editors, DFG Senate Commission on Food Safety ; editorial committee, Gerhard Eisenbrand ... [et al.] ; scientists of the SKLM secretariat, Sabine Guth, Michael Habermeyer and Barbara Kochte-Clemens
Pubbl/distr/stampa	Weinheim [Germany], : Wiley-VCH, 2010
ISBN	9786613302489 1-283-30248-9 3-527-63471-1 3-527-63470-3 3-527-63483-5
Edizione	[1st ed.]
Descrizione fisica	1 online resource (476 p.) : ill. (some col.)
Collana	Forschungsberichte (DFG)
Altri autori (Persone)	EisenbrandGerhard GuthSabine HabermeyerMichael Kochte-ClemensBarbara
Disciplina	363.1922
Soggetti	Phytochemicals Food - Safety measures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Title page -- copyright -- Vorwort -- Preface -- 1: Bericht und Schlussfolgerungen -- 1.1 Einleitung -- 1.2 Methodenbergreifende Aspekte -- 1.3 Methoden -- 1.4 Schlussfolgerungen und Empfehlungen -- 1.5 Fazit -- 2: Report and Conclusions -- 2.1 Preface -- 2.2 Transdisciplinary Aspects -- 2.3 Methodologies -- 2.4 Conclusions and Recommendations -- 2.5 Concluding Remarks -- 3: Contributions -- 3.1: Visions on Toxicity Testing in the 21st Century: Reflections on a Strategy Document of the US National Research Council -- 3.1.1 Introduction -- 3.1.2 A New Vision of Toxicity Testing -- 3.1.3 Testing the Vision -- 3.1.4 Steps toward a New Toxicology -- 3.1.5 The Precautionary Principle -- 3.1.6 The European Side -- 3.1.7 Tasks Ahead -- Acknowledgements -- Abbreviations and Glossary of Terms

-- References -- 3.2: Safety Assessment of Botanicals and Botanical Preparations Used as Ingredients in Food Supplements: Testing an European Food Safety Authority Tiered Approach -- 3.2.1 Introduction -- 3.2.2 Materials and Methods -- 3.2.3 Results -- 3.2.4 Discussion -- Acknowledgement -- References -- 3.3: In Silico Toxicology Screening of the Rodent Carcinogenic Potential of Phytochemicals Using Quantitative Structure-Activity Relationship Analysis -- 3.3.1 Introduction -- 3.3.2 Why Use In Silico Predictive Models at FDA? -- 3.3.3 What In Silico Predictive Models does the FDA Use? -- 3.3.4 What In Silico Predictive Software does the FDA Use? -- 3.3.5 Why Use In Silico Strategies as a Novel Approach to Assess Toxicity of Phytochemicals? -- 3.3.6 Prediction of Rodent Carcinogenicity of Phytochemicals in an External Validation Study -- 3.3.7 Conclusions -- Acknowledgements -- Conflict of Interest Statement -- References -- 3.4: Testing Computational Toxicology Models with Phytochemicals -- 3.4.1 Introduction -- 3.4.2 Materials and Methods -- 3.4.3 Results. 3.4.4 Discussion -- Acknowledgements -- Abbreviations -- Conflict of Interest Statement -- References -- 3.5: In Silico Models to Establish Level of Safety Concern in Absence of Sufficient Toxicological Data -- 3.5.1 Introduction -- 3.5.2 Computational Toxicology Models Relevant for the Food Sectors: Requirements -- 3.5.3 Available Computational Toxicology Models for Food Applications -- 3.5.4 Model Integration and Application -- 3.5.5 Computational Toxicology and Safety Assessment of Botanical Extracts -- 3.5.6 Discussion and Conclusion -- References -- 3.6: In Silico Methods for Physiologically Based Biokinetic (PBBK) Models Describing Bioactivation and Detoxification of Coumarin and Estragole: Implications for Risk Assessment -- 3.6.1 Introduction -- 3.6.2 Methods -- 3.6.3 Results -- 3.6.4 Discussion -- Acknowledgements -- Abbreviations -- Conflict of Interest Statement -- References -- 3.7: In Vitro Models for Carcinogenicity Testing Reality or Fantasy? -- 3.7.1 Introduction -- 3.7.2 BALB/c 3T3 Cell Transformation Assay -- 3.7.3 Automated Soft Agar Assay -- 3.7.4 Concluding Remarks -- Acknowledgments -- References -- 3.8: Carcinogen Specific Expression Profiling: Prediction of Carcinogenic Potential? -- 3.9: Safety and Biological Efficacy Testing of Phytochemicals: An Industry Approach -- 3.9.1 Introduction -- 3.9.2 Screening Process -- 3.9.3 Regulatory Pre-Clinical Safety -- 3.9.4 Overall Conclusion -- References -- 3.10: Metabolite Profiling in Rat Plasma as a Potential New Tool for the Assessment of Chemically Induced Toxicity -- 3.10.1 Introduction -- 3.10.2 Materials and Methods -- 3.10.3 Results and Discussion -- 3.10.4 Concluding Remarks -- Acknowledgements -- References -- 3.11: Profiling Techniques in Nutrition and Food Research -- Hannelore Daniel¹ -- 3.11.1 Introduction. 3.11.2 Genomics Applications in Basic and Pre-Clinical Nutrition and Food Research -- 3.11.3 Profiling Technologies Applied in Human Studies -- 3.11.4 Evidence for a Significant Role of the Gut Microbiota in Human Responses to Dietary Interventions -- 3.11.5 Summary -- References -- 3.12: The Complex Links between Dietary Phytochemicals and Human Health Deciphered by Metabolomics -- 3.12.1 Introduction -- 3.12.2 Measuring Dietary Intake of Phytochemicals: Current Limitations -- 3.12.3 Biomarkers of Phytochemical Intake -- 3.12.4 Metabolomics and Biomarker Discovery -- 3.12.5 Metabolomics and Phytochemical Intake -- 3.12.6 Metabolomics and Biological Effects of Phytochemicals -- 3.12.7 Conclusion -- Acknowledgments -- Glossary⁴ -- Conflict of Interest Statement -- References -- 3.13: Anti-Oxidative and Antigenotoxic Properties of Vegetables and Dietary Phytochemicals: The Value of

Genomics Biomarkers in Molecular Epidemiology -- 3.13.1 Introduction -- 3.13.2 Colorectal Cancer Risk Prevention by Vegetables -- 3.13.3 Gene Expression Modulation in the Colon by Vegetables and Phytochemicals -- 3.13.4 Genetic Polymorphisms and Anti-Oxidative Response -- 3.13.5 Risk-Benefit Analysis of Dietary Phytochemicals -- 3.13.6 Concluding Remarks -- References -- 3.14: The Japanese Toxicogenomics Project: Application of Toxicogenomics - Utilizing Toxicogenomics into Drug Safety Screening -- 3.14.1 Introduction -- 3.14.2 Current Status of Worldwide Toxicogenomics Database Creation -- 3.14.3 The Toxicogenomics Project in Japan -- 3.14.4 Application of Toxicogenomics -- 3.14.5 Future Perspectives -- Acknowledgements -- Conflict of Interest Statement -- References -- 3.15: Toxicology and Risk Assessment of Coumarin: Focus on Human Data -- 3.15.1 Introduction -- 3.15.2 Hazard of Coumarin -- 3.15.3 Human Exposure -- 3.15.4 Risk Assessment -- 3.15.5 Summary and Conclusion. Abbreviations -- Conflict of Interest Statement -- References -- 3.16: Risk from Furocoumarins in Food? An Exposure Assessment -- 3.16.1 Introduction -- 3.16.2 Materials and Methods -- 3.16.3 Results and Discussion -- 3.16.4 Conclusions -- Acknowledgements -- References -- 3.17: Transcriptome Analysis in Benefit-Risk Assessment of Micronutrients and Bioactive Food Components -- 3.17.1 Introduction -- 3.17.2 Whole Genome Transcriptome Analysis as a Tool for Benefit-Risk Analysis -- 3.17.3 Data Confirmation by qRT-PCR -- 3.17.4 Magnitude of Micronutrient Effects -- 3.17.5 Data Interpretation -- 3.17.6 In Vivo and In Vitro Approaches -- 3.17.7 Animal Models and Diets -- 3.17.8 Sensitivity and Power -- 3.17.9 Conclusion -- Acknowledgements -- Conflict of Interest Statement -- References -- 3.18: Colorectal and Prostate Cancer: The Role of Candidate Genes in Nutritional Pathways -- 3.18.1 Selenium: Biologic Mechanisms of the Chemopreventive Effects of Selenium -- 3.18.3 Overall Evidence from Candidate-Gene Association Studies for Cancer -- References -- 3.19: Glucosinolates: DNA Adduct Formation In Vivo and Mutagenicity In Vitro -- 3.19.1 Introduction -- 3.19.2 Formation of DNA-Reactive Molecules in Plant Homogenates -- 3.19.3 Formation of DNA Adducts in Animals Fed with Broccoli -- 3.19.4 Elucidation of the Structure of Broccoli-Associated DNA Adducts and Identification of the Substances Involved -- 3.19.5 Mutagenicity of GLS-A -- 3.19.6 Conclusions and Perspectives -- Acknowledgements -- References -- 3.20: Defence Mechanisms against Toxic Phytochemicals in the Diet of Domestic Animals -- 3.20.1 Introduction -- 3.20.2 Polygastric Herbivory: Pre-Systemic Detoxification of Phytochemicals by the Rumen Microbiota -- 3.20.3 Monogastric Herbivory: Are Acquired Feeding Strategies Sufficiently Protective?. 3.20.4 Efflux Transporters: Functional Elements of the Intestinal Barrier -- 3.20.5 Pre-Systemic Elimination by Biotransformation -- 3.20.6 Transcriptional Regulation of Efflux Transporters and Biotransformation Enzymes -- 3.20.7 Carnivorous Species: When Plant Metabolites Become Lethal -- 3.20.8 Risk Assessment of Phytochemicals in Animal Feeds -- References -- 4: Posters -- 4.1: Coumarin Risk Assessment: Lessons from Human Data -- References -- 4.2: Coffee and Coffee Compounds are Effective Antioxidants in Human Cells and In Vivo -- 4.2.1 Introduction -- 4.2.2 Materials and Methods -- 4.2.3 Results and Discussion -- Acknowledgments -- References -- 4.3: Studying Absorption, Distribution, Metabolism, and Excretion of a Complex Extract -- 4.4: Polyphenolic Apple Extracts and their Constituents Modulate DNA Strand Breaks and Oxidation Damage in Human Colon Carcinoma Cells -- 4.4.1 Introduction -- 4.4.2 Methods -- 4.4.3 Results and Discussion -- 4.4.4 Conclusion -- Acknowledgements --

References -- 4.5: Comparative Evaluation of Experimental Data on - Amylase Inhibition by Flavonoids Using Molecular Modelling -- 4.6: Potential Risk of Furan in Foods -- 4.7: Comparative Study on the Toxicity of Alternariol and Alternariol Monomethyl Ether in Human Tumour Cells of Different Origin -- References -- 4.8: A Role for Resveratrol and Curcumin in Sensitization of Glioblastoma Cells to Genotoxic Stress Induced by Alkylating Chemotherapeutics -- 4.9: BfR Risk Assessment of Alkaloids as Ingredients and Contaminants of Food: Quinine, Opium Alkaloids, and Senecio Pyrrolizidine Alkaloids -- 4.9.1 Quinine in Bitter Soft Drinks - Are there Special Risk Groups? -- 4.9.2 Opium Alkaloids as Contaminants of Poppy Seeds -- 4.9.3 Senecio vulgaris L. as Contaminant of Mixed Salad -- References.
4.10: Elucidation of the Genotoxic Activity of the Alkaloid Ellipticine in Human Cell Lines.

Sommario/riassunto

Phytochemicals are non-nutritive plant chemicals that protect us and prevent us from diseases. There are thousands of known phytochemicals, e.g. in tomatoes, soy and in fruits. While these are known helpful antioxidants, their potential toxicity is essential for identifying any risks for humans.
