

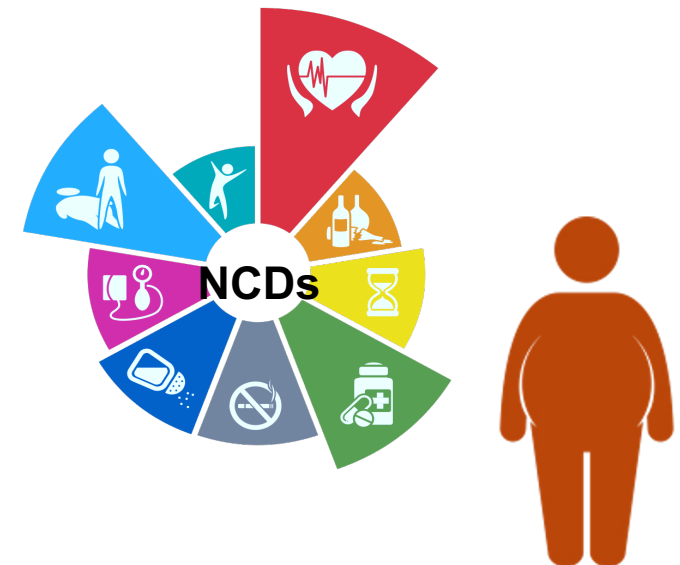


Novel foods for new consumers trends

Nuno Mateus



Current challenges impacting Food Industry



Top 5 trends for the agrifood industry

Health

Convenience & Technology

Alternative Proteins

Sustainability & Reducing Waste

New Flavours & Experiences



Trends for the Agrifood Industry

Consumers needs...



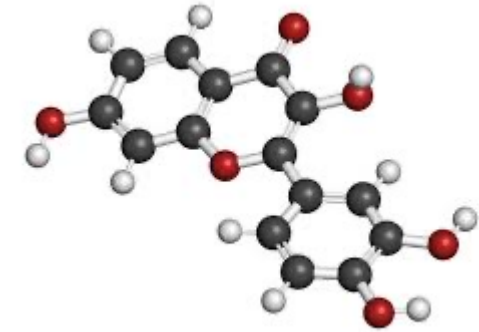
Healthy, yet tasty foods!



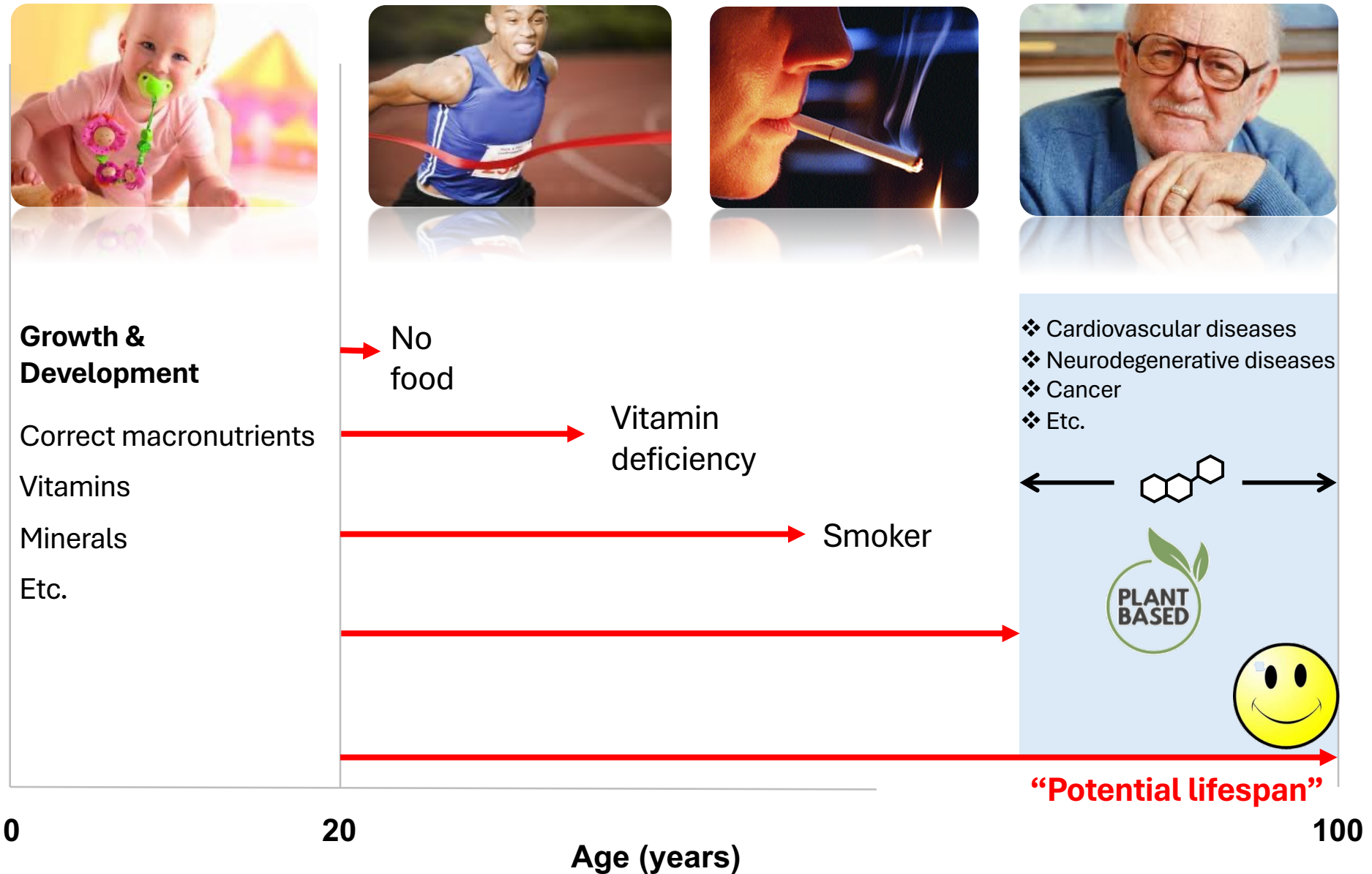
Quick and cheap foods!



Plants as a source of nutrients and bioactives



Polyphenols are “lifespan-essential”



Polyphenols & Food Industry

Polyphenols have recently been termed “lifespan essentials”, and they actively work in the body to prevent certain disease mechanisms from occurring.



Polyphenols are antioxidants from plant foods that work in the body to enhance health in complex ways, and as such they are not simply antioxidants.



Consumer awareness

Boosting one's intake of antioxidant polyphenols on a daily basis is easy to do, and can be a tasty, gourmet adventure.



Polyphenols & Food Industry

- ✓ The consumer has already heard of polyphenols (media, labels, etc.)
- ✓ The consumer knows the concept of “antioxidant”
- ✓ The consumer associates the ingestion of polyphenols with health benefits



“Contains bioflavonoid substances and catechins”



*“Antioxidant catechins”
“beauty drink”*



“Contains the double of catechins”



“Antioxidant capacity”

Polyphenols & current trends



Polyphenols & current trends



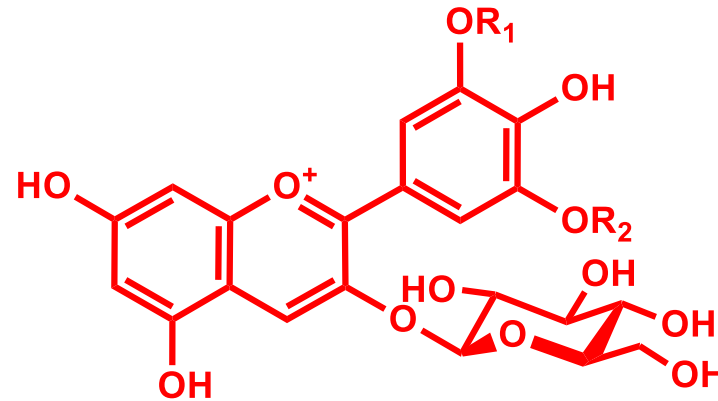
Polyphenols as a currently fashionable trend...



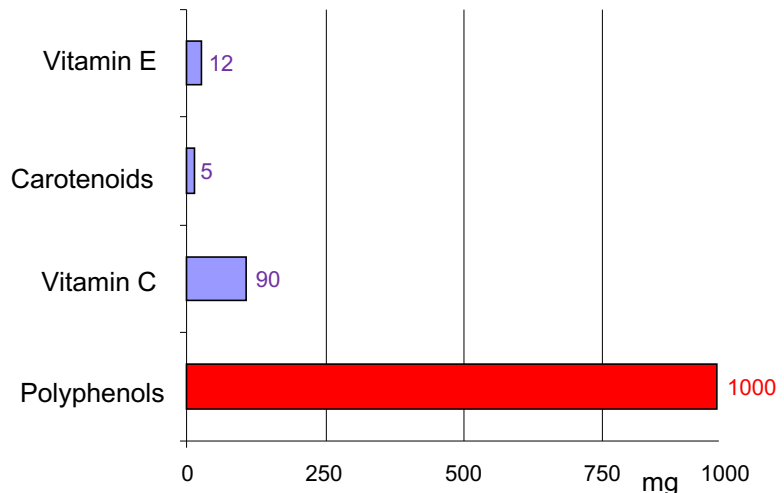
Classification of phenolic compounds

Flavonoids

- Flavanols
- Flavonols
- Flavanonols
- Anthocyanins**
- Flavones
- Isoflavones
- Flavanones



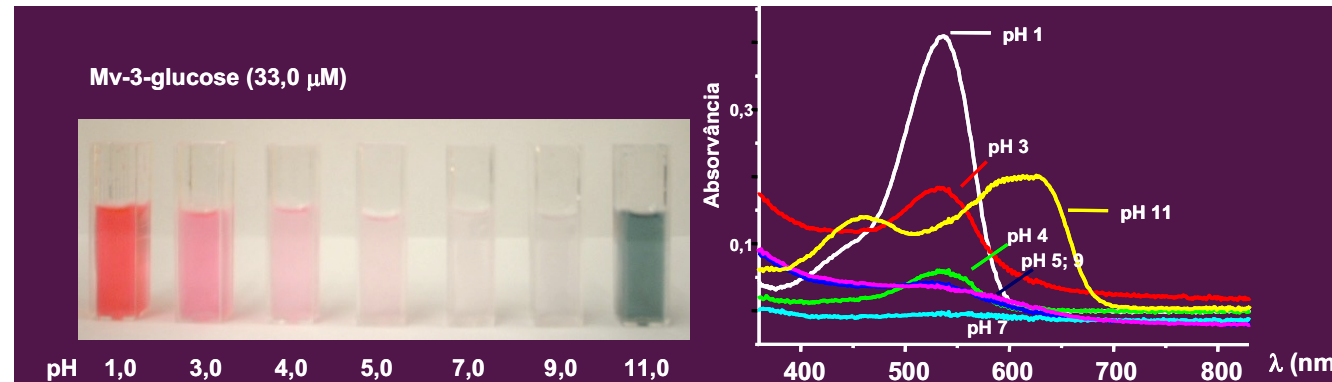
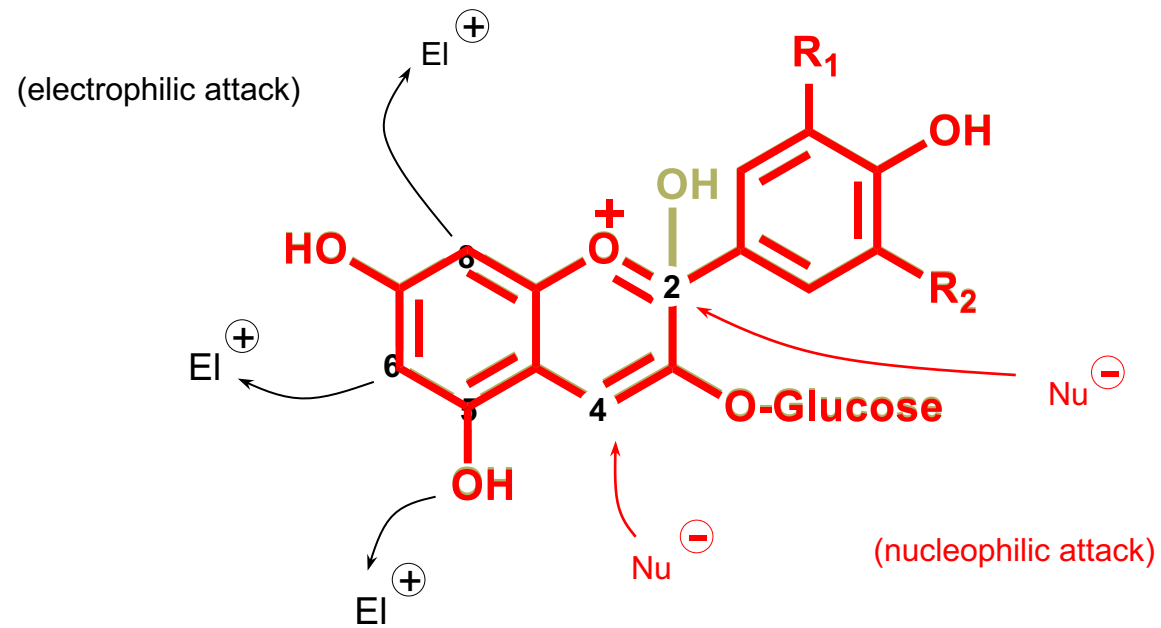
Daily intake



Non-flavonoids

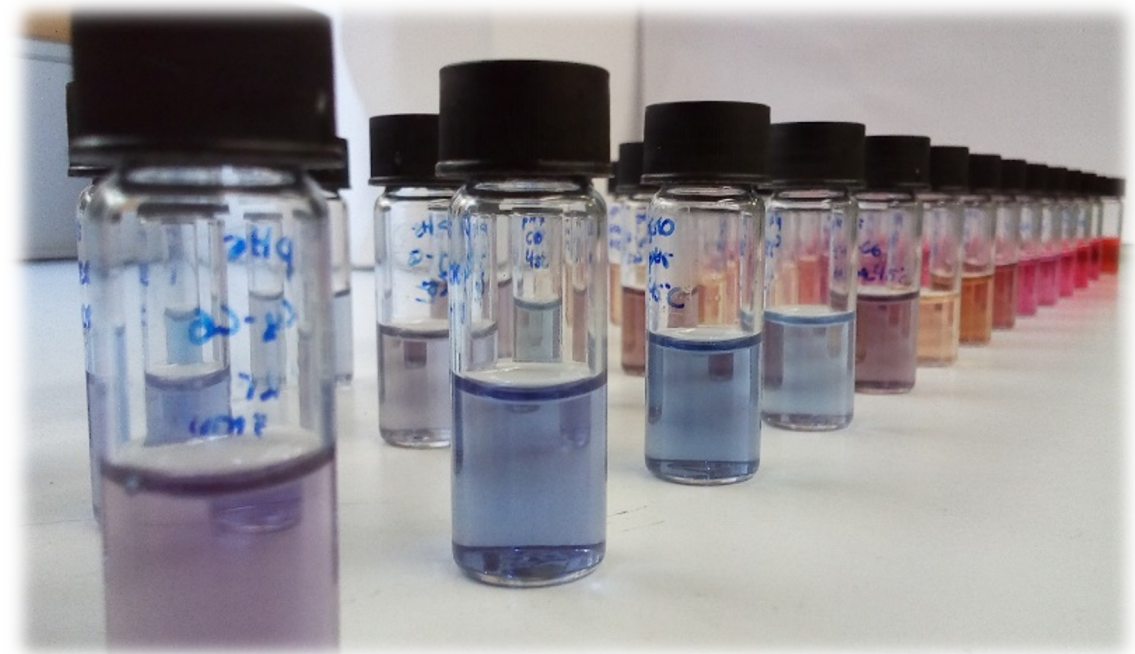
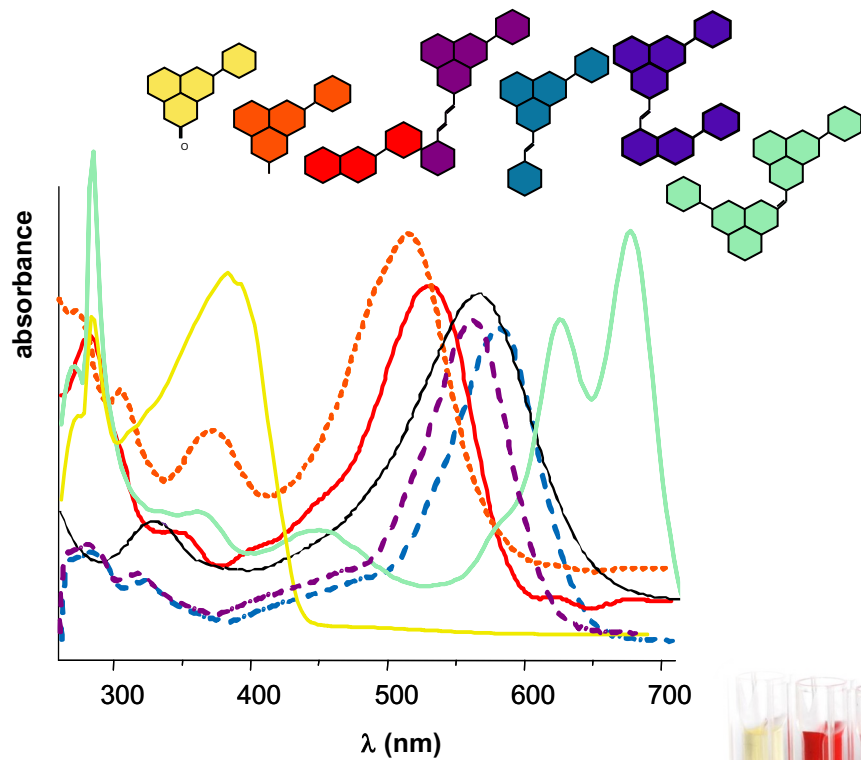
- Chalcones
- Phenolic acids
- Stilbens
- Phenols
- Lignans
- Phenolic alcohols
- Etc.

Reactivity of anthocyanins



Anthocyanin-derived pigments in red wines

Anthocyanin derivatives in red wine: a portfolio of natural colors



Agrifood loss and waste management



Agrifood Recycling of polyphenols

Portuguese industrial activities

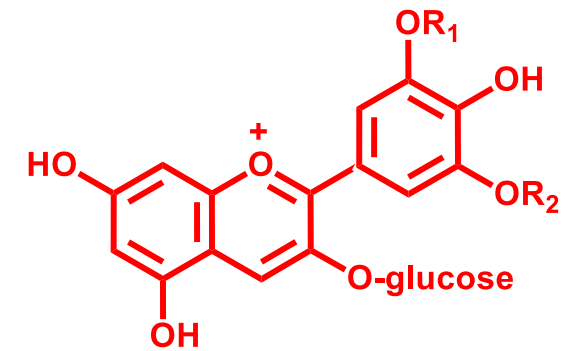
Wine Industry



Red fruit Industry



tons of residues or wastes



Natural **water-soluble** pigments

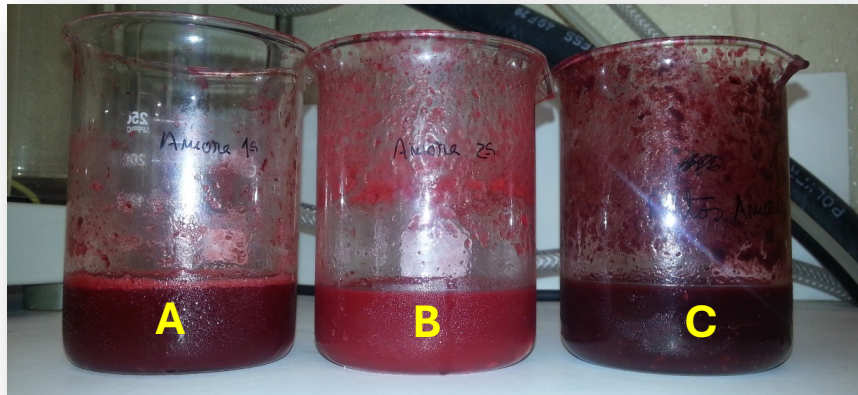
- ❖ Colours
- ❖ Antioxidants
- ❖ Health benefits (nutraceuticals)

Agrifood Recycling of polyphenols

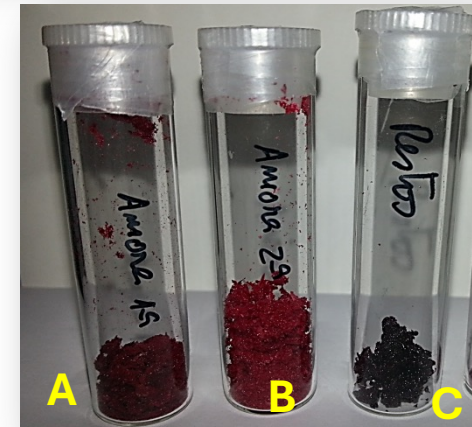
Blackberries



Agrifood Recycling of polyphenols



A - Premium quality
B - Medium quality
C - Waste



Agrifood R&D



From wastes...



...to valuable ingredients

New challenges



- ✓ Sensory Evaluation
- ✓ Nutritional Profile
- ✓ Protein/Fiber Biodigestability
- ✓ Bioactivity
- ✓ Anti-nutritional Compounds



Plant-based / Polyphenol-enriched prototypes

- ✓ Fruit and Veg preparations
- ✓ Meat analogues
- ✓ Functional preparations
- ✓ Cereal and Seed preparations
- ✓ Dairy Alternatives to Yogurt and Milk
- ✓ Cheese analogues
- ✓ Beverages
- ✓ Sweets
- ✓ Other Culinary Applications

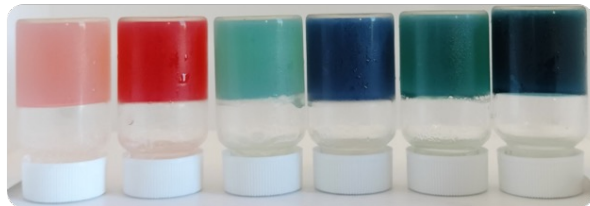


Sweets & Candy

GELATIN-BASED PRODUCTS



Animal-based gelatin



Plant-based gelatin

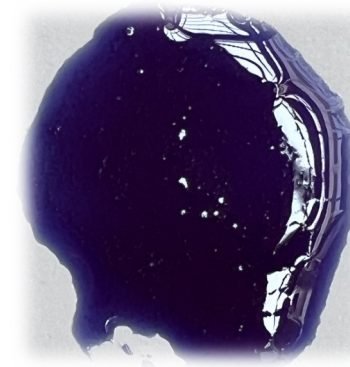
GUMMYS



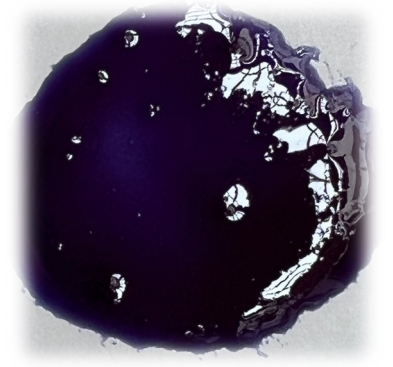
MARSHMALLOWS



SUGAR SYRUP-BASED PRODUCTS



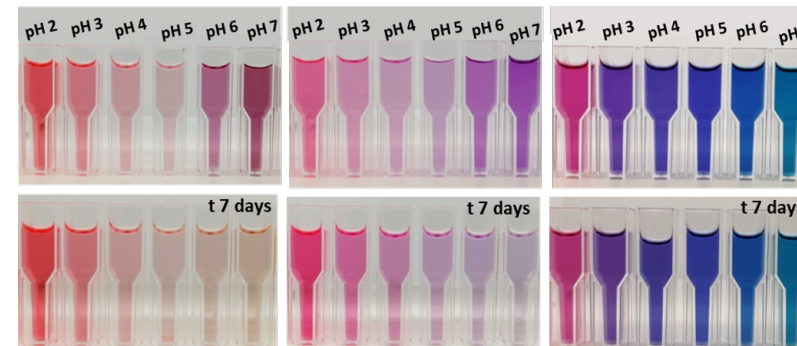
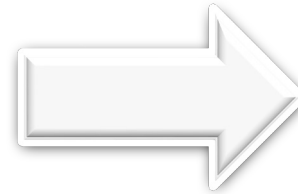
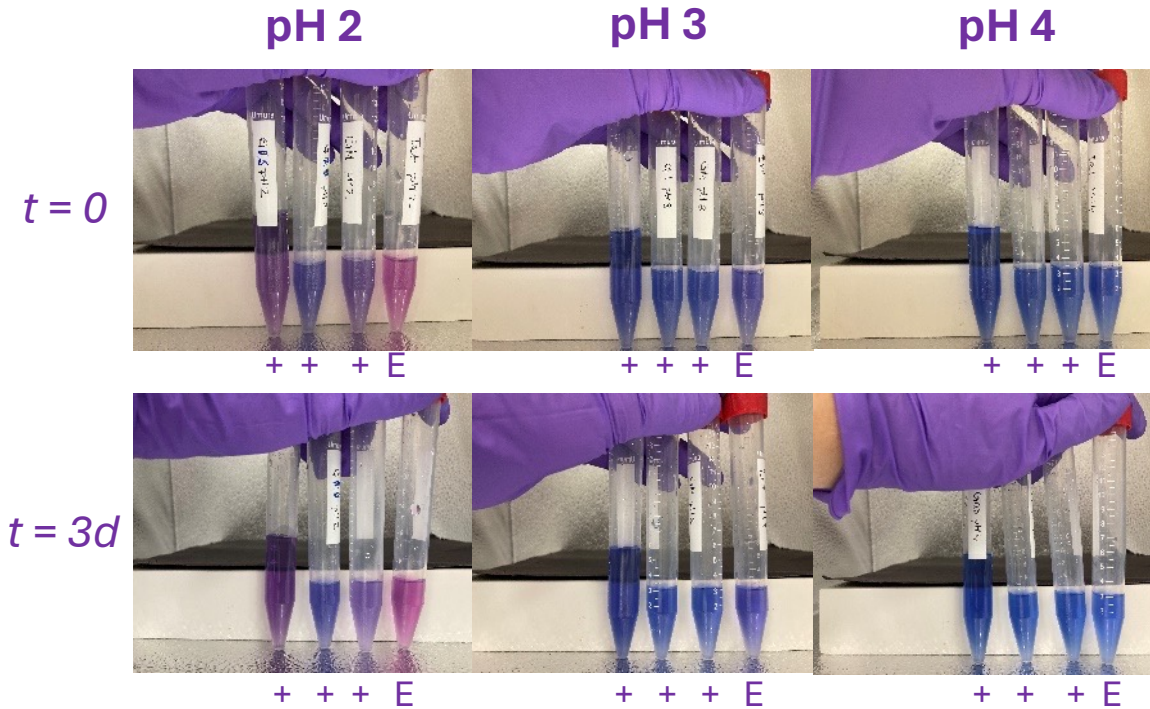
5% plant extract
in sugar syrup



10% plant extract
in sugar syrup

Isotonic Drinks

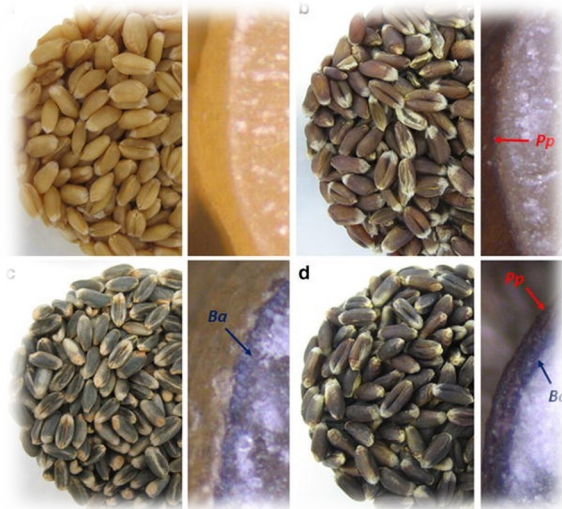
PLANT-BASED EXTRACTS WITH IMPROVED COLOR STABILITY



Blue colour stabilisation

Fostering sustainable wheat-based diets

NOVEL ANTHOCYANIN AND CAROTENOID-RICH WHEAT GRAINS



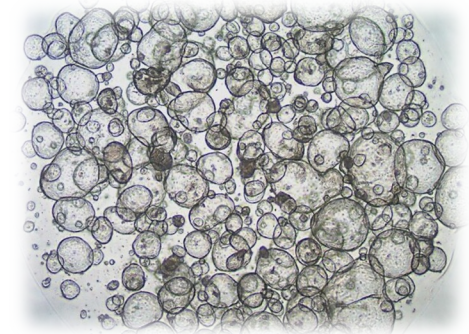
NUTRITIONAL, PROTEOMIC AND METABOLOMIC PROFILING

SOURDOUGH FERMENTATION

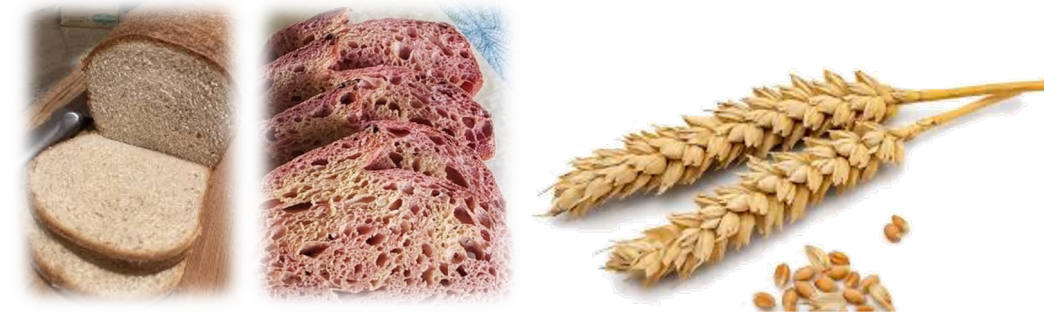


FOR LOWER IMMUNOREACTIVE GLUTEN PROTEIN CONTENTS AND ENHANCED ANTIOXIDANT PROPERTIES

BIOACTIVITY CHARACTERIZATION



ON CONTROL AND CELIAC DISEASE INTESTINAL EPITHELIAL ORGANOID AND T-CELLS

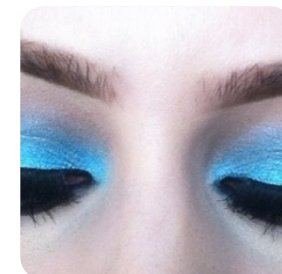


whEATit : Putting gluten back on menu



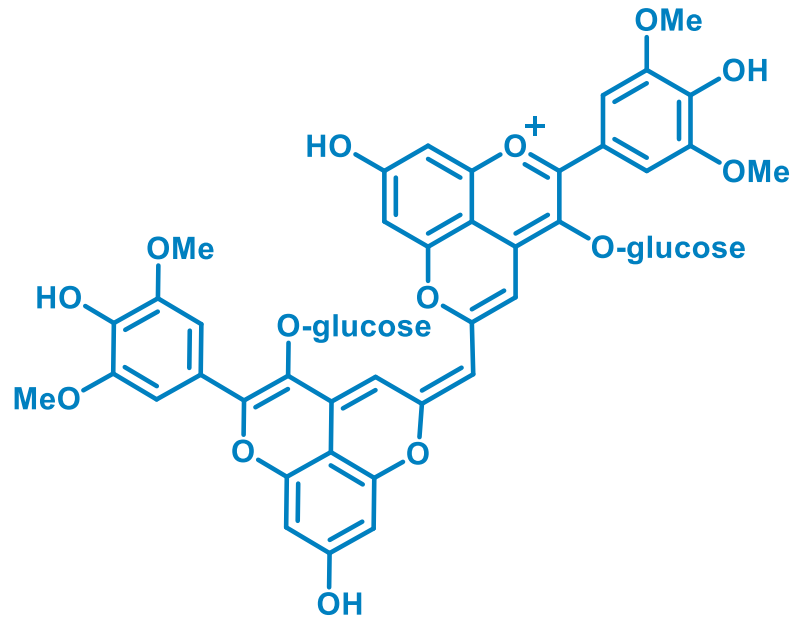
WHEATBIOME - The healthy and sustainable solution for wheat

...towards novel technological applications



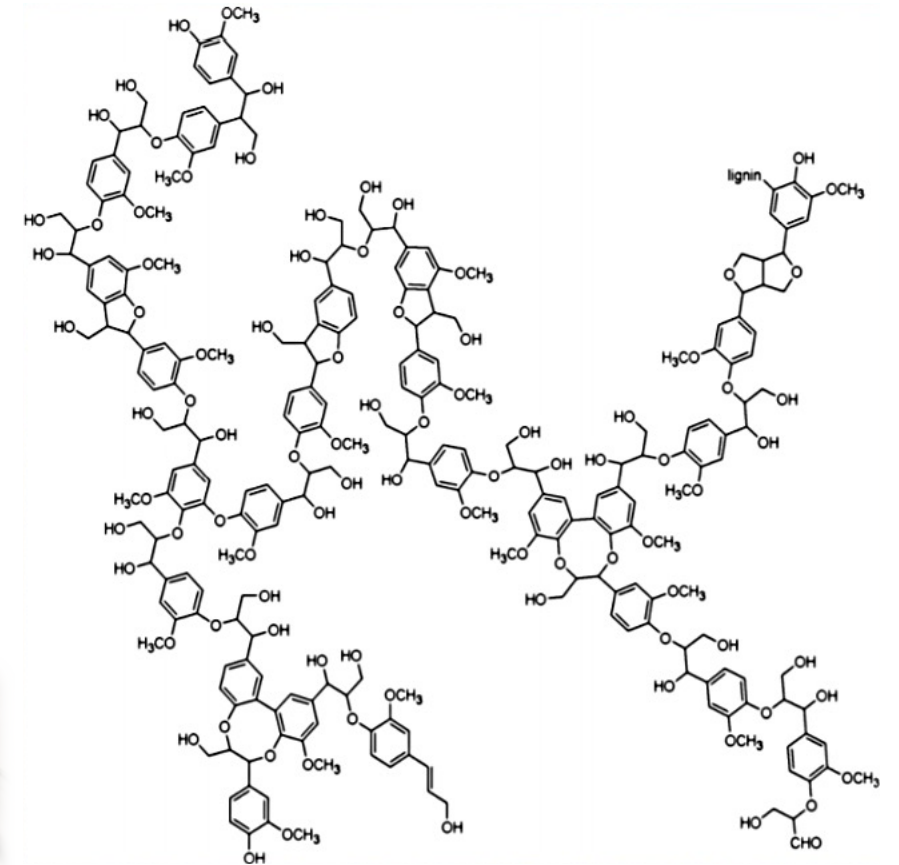
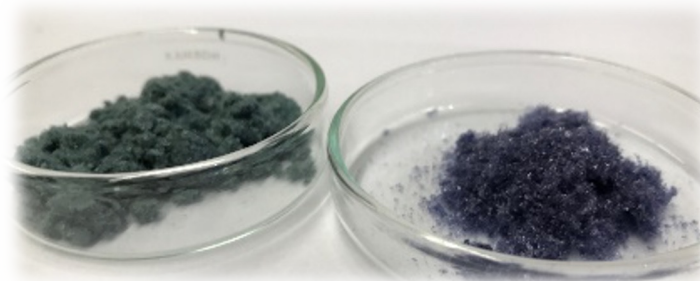
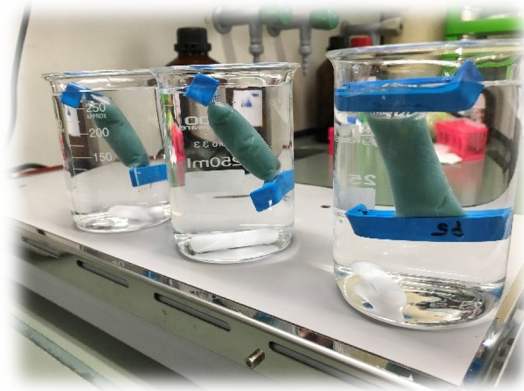
...towards novel technological applications

Natural blue dyes



Pyranomalvidin-3-glucoside dimer (PD)

- ✓ Attractive blue color
- ✓ High chromatic stability at different pH
- ✓ Low solubility in aqueous systems



Kraft Lignin (LignoBoost™) Average MW 5 000 Da

Acknowledgments



DQB Departamento de Química e Bioquímica

