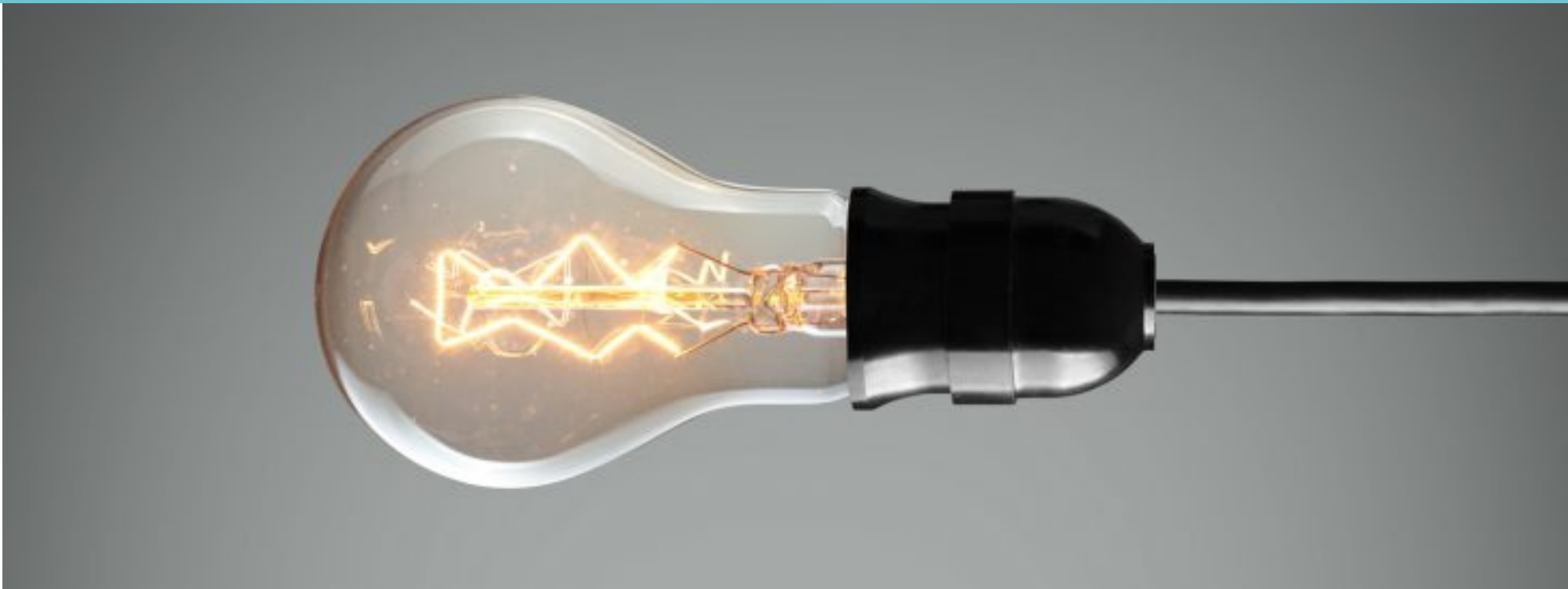
RESEARCH & INNOVATION

Chemical Analysis - Quality Control

GALANAKIS LABORATORIES



Catalogue of services, analysis, research, and innovation activities

•DNA ANALYSIS:

-Authentication of foods (e.g., olive oil, date fruits, etc.) and drinks (e.g., wine) with molecular (PCR/DNA) techniques
-Detection of pork in meat products/authentication of Halal products
-Detection of food allergens
-Genotyping and serotyping of pathogenic microorganisms

•QUALITATIVE AND QUANTITATIVE ANALYSIS OF ANTIOXIDANTS:

-Phenols (total, o-diphenols, soluble free, esterified and insoluble-bound phenols)
-Phenolic classes (hydroxycinnamic acid derivatives, flavonols, and anthocyanins)
-Anthocyanins (total, monomeric, pigmented, and polymeric)
-Flavanons, flavanols, and proanthocyanidins
-Total carotenoids, tannins classification, and ascorbic acid determination

•DETERMINATION OF CO-EXTRACTED COMPOUNDS, CONTAMINANTS, AND MACROSCOPIC PARAMETERS:

-Water content, total and suspended solids, fats and oils, and profile of fatty acids
-Proteins, carbohydrates, pectin, Klason lignin, starch, total and reducing sugars
-pH, conductivity, acidity, turbidity, alkalinity, and salinity
-Total sulfite, sorbic acid, benzoic acid, nitrate and nitrite ions, potassium and sodium
-Microbiological parameters as appropriate

•*IN VITRO* ANTIOXIDANT CAPACITY OF EXTRACTS, BY-PRODUCTS, AND OTHER NATURAL SUBSTRATES:

-Scavenging activity against DPPH and ABTS radicals
-Ferric Reducing/Antioxidant Power (FRAP) assay
-Antioxidant activity against lipid oxidation (Thiobarbituric acid test - TBARS assay)
-Phosphomolybdenum assay and β-carotene bleaching inhibition assay

- ***IN SITU*** **ANTIOXIDANT CAPACITY OF NATURAL EXTRACTS IN VEGETABLE OILS, MEAT PRODUCTS, AND OTHER FOODS:**

-Antioxidant activity against lipid oxidation (Thiobarbituric acid test)

-Relative concentration of oxymyoglobin in meat model systems and meat products

-Total polar compounds, peroxide, anisidine, and totox values, absorbance in ultraviolet (conjugated dienes) in vegetable oils

- ***IN VITRO*** **ANTIMICROBIAL ACTIVITY OF EXTRACTS, BY-PRODUCTS AND OTHER NATURAL SUBSTRATES:**

-Detection of Minimum Inhibitory Concentration (MIC) by broth dilution method

-Detection of Minimum Bactericidal Concentration (MBC) by sub-culturing into blood agar

- **INGREDIENT REPLACEMENT AND FORTIFICATION OF FOODS, BEVERAGES, AND COSMETICS WITH ANTIOXIDANTS:**

-Development of protocols for the generation of innovative foods with added polyphenols

-Support on the development of respective prototypes

-Effect of antioxidants in the shelf-life of the products (vegetable oils, bakery, meat, dairy, wine, smoothies, alcoholic drinks, confectionery, etc.) using microbiological and chemical parameters

-Sensory profiling and quality characteristics of the products after antioxidants implementation and during storage

- **STRATEGIC CONSULTING ON BIO-WASTE VALORIZATION, BIO-PRODUCTS DEVELOPMENT, AND ANTIOXIDANTS RECOVERY FROM DIFFERENT PHYSICAL PRODUCTS AND FOOD WASTE:**

- Estimation of by-products forms, availability, distribution, and production data
- Target and non-target (impurities) compounds definition and detection
- Design of the overall recovery strategy up to the final (encapsulated) product
- Antioxidants functionality and potential applications (e.g., ingredient replacement) in food products and cosmetics
- Scouting of the available patented methodologies, technologies, and applications

- **TAILOR-MADE STUDIES FOR THE OPTIMIZED RECOVERY OF ANTIOXIDANTS FROM NATURAL PRODUCTS AND UNDERUTILIZED BY-PRODUCTS:**

- Complete characterization of by-products, waste and natural substrates
- Optimization of extraction conditions and techniques in each stage of downstream processing
- Investigation of extracts addition in different products

since 1925

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