Advanced Natural Product & Computational Analysis Services

1. Preparation of Plant Material

- Cleaning, drying, vacuum drying, crushing, grinding

2. Quantitative and Qualitative Analysis of Plant Material

- Verification of plant authenticity: moisture content, ash content, extractive substances
- Mineral composition: macro- and microelements
- Quantitative determination of flavonoids, alkaloids, coumarins, tannins, free organic acids, saponins, polysaccharides, and vitamin C

3. Preparation of Plant Extracts

- Ultrasonic extraction
- Maceration
- Fractionation using solvents of different polarity

4. Determination of Organic Compounds in Plant Extracts

- Gas Chromatography–Mass Spectrometry (GC–MS)
- High-Performance Liquid Chromatography (HPLC)
- Thin-Layer Chromatography (TLC)
- Detailed chromatographic profiling of plant extracts and isolated compounds
- Comparison with standards, complete descriptions of peaks

5. Enzyme Inhibition & Kinetics Analysis

- IC_{50} calculation for potency assessment
- Enzymes: glycosides (anti-diabetics) and other targets upon request
- Full set of enzyme kinetics including mode of inhibition
- Slow-binding inhibition studies
- Detailed enzyme activity profiling

6. Fluorescence Quenching Binding Affinity

- Advanced binding affinity analysis of enzymes with bioactive compounds
- Fluorescence quenching experiments for interaction strength and specificity
- Quantitative interpretation of binding constants

7. Antioxidant Activity Profiling

- Comprehensive antioxidant assays: DPPH, ORAC, FRAP, TBARS, ABTS
- Determination of phenolic and polyphenols contents
- Evaluation of both bioactive and synthetic compounds
- Comparative activity charts and visual summaries

8. Molecular Docking Analysis

- In-depth docking studies of natural and synthetic compounds
- Comprehensive ligand–protein interaction mapping
- Publication-ready analysis

9. Toxicity Profiling of Bioactive Compounds

- Advanced *in silico* toxicity evaluation
- Prediction of mutagenicity, carcinogenicity, hepatotoxicity, cardiotoxicity, and other safety parameters
- Visual figures with clear descriptions

10. ADMET Profiling

- Complete assessment of Absorption, Distribution, Metabolism, Excretion, and Toxicity
- Visual interpretation of results for clarity and research reporting

11. Network Pharmacology Analysis

- Screening of compounds based on Lipinski's rule, toxicity, and bioavailability
- Identification of compound and disease targets
- Protein–protein interaction mapping
- Gene Ontology (GO) and KEGG pathway analyses
- Cytoscape-based network visualization
- Complete *Materials & Methods* and *Results* sections ready for manuscript submission

12. LC-MS Based Molecular Networking

- Classical and feature-based molecular networking on GNPS platform
- High-resolution metabolite mapping and visualization

13. Manuscript Writing & English Editing

- Professional manuscript preparation from results to publication-ready format
- High-quality English editing for clarity, grammar, and style
- Formatting tailored to target journal requirements