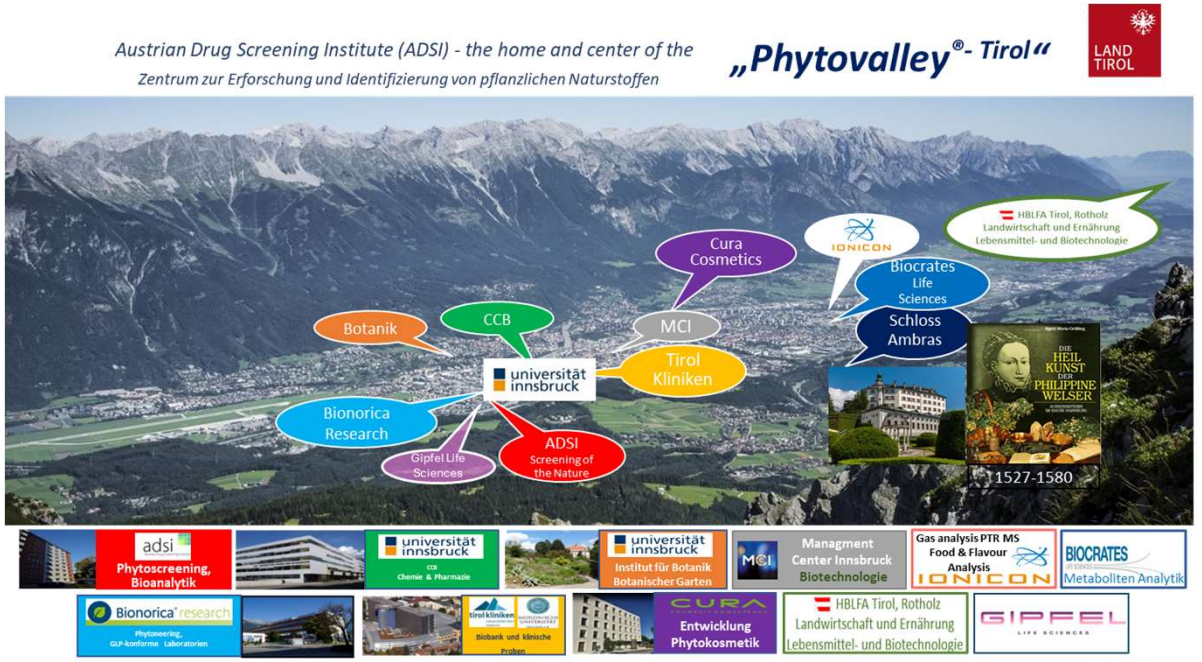
"Natural Compounds. Measurable Impact.

ADSI's Discovery Platform for the Phyto Future"



Thomas Jakschitz - Austrian Drug Screening Institute GmbH

Life Science Partnering 2025

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Mission

Routine is not our field of activity - we work with innovative technologies and also develop new analytical and biological processes with our industrial partners for the production of high-quality and safe products in the field of phytopharmaceuticals, phytocosmetics and phyto-nutrition (herbal food supplements)

adsi phyto

LAND TIROL

Bundesministerium Bildung, Wissenschaft und Forschung

Bionorica

PHYTO NUTRITION | PHYTO PHARMA | PHYTO COSMETICS

MISSION

1. Research – Phytosciences

2. ADSI as a “missing” link between basic research and industry. Analytical and molecular biological screening of natural plant substances for industry.

3. Strengthening the location in Austria in the field of phyto-research -Lighthouse „Phytovalley Tirol“

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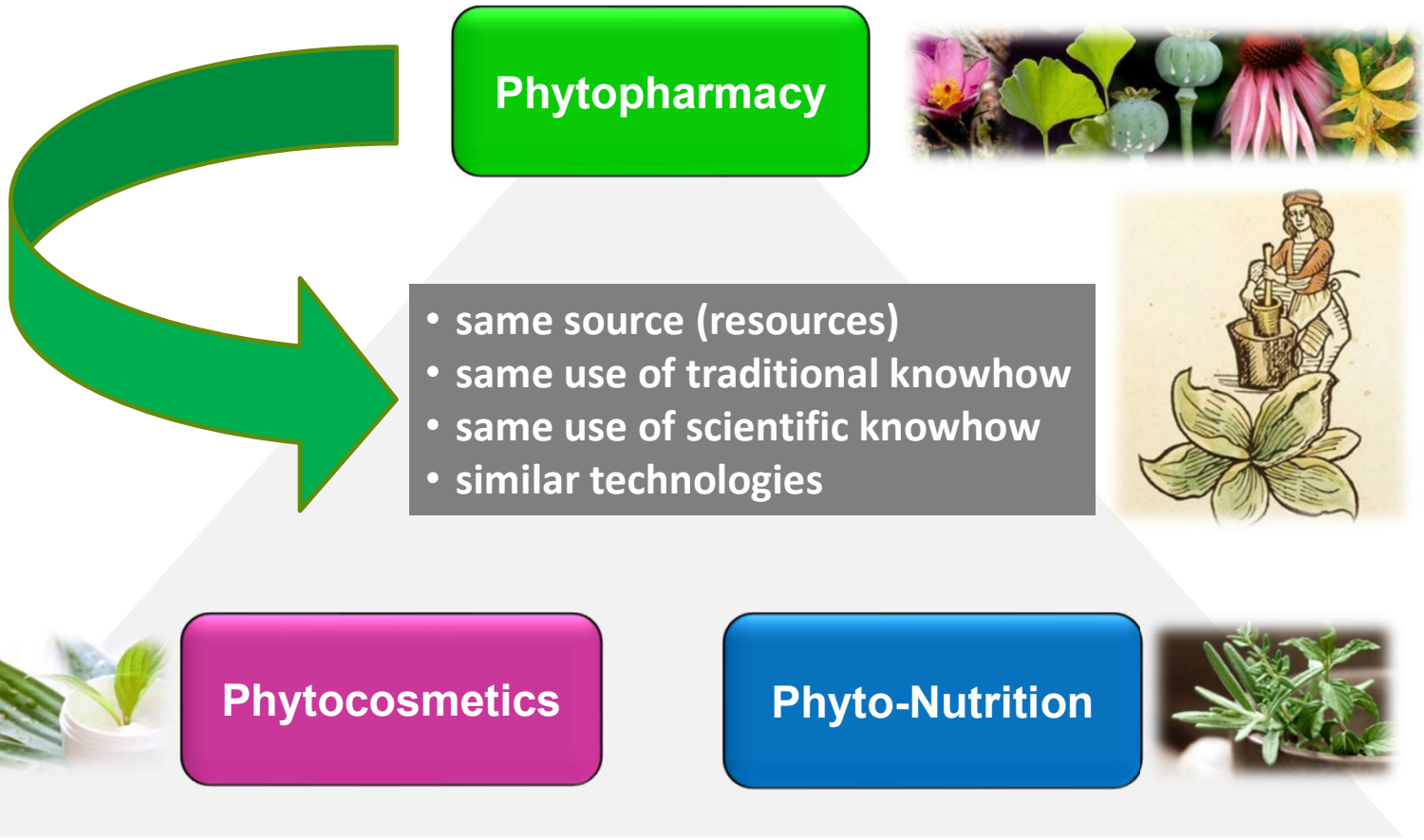
From Phytopharmacy to Phytocosmetics and Phyto-Nutrition



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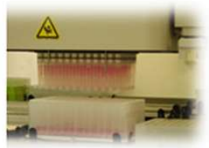
Analytical Division

Analysis of natural products

- LC/UV (Thermo Ultimate 3000)
- LC/HRqTOF MS (Waters Xevo G3)
- LC/HRqTOF MS (Bruker Maxis Impact)
- GC/MS (Agilent Technologies)
- CE/MS (Hewlett Packard)
- Ambient MS Technology (Advion, Waters, Bruker)

Extraction of natural products

- Extraction
  - Accelerated Solvent Extraction (Thermo Scientific ASE 350)
  - Aquasolv®
  - Ultrasonic Assisted Extraction
  - Soxhlet
  - Mazeration
- Concentration
- Drying
- Enrichment



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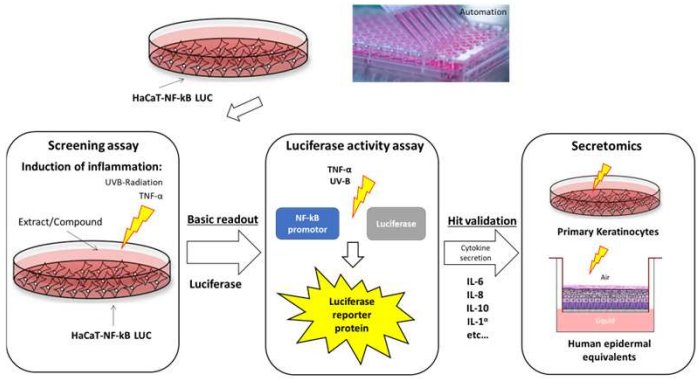
Biological Division

2D Cell-Models



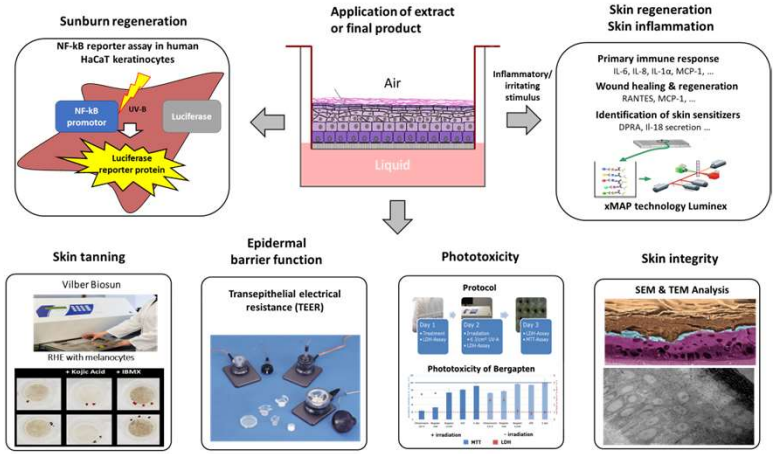
Cell lines:

- HaCat
- CaCo-2
- HK-2
- HeLa
- SCCE016
- SCC067/HMC-1.1
- B16-F10
- EAhy926
- HepG-2
- HCE-2

Assays:

- Cytotoxicity Assay
- NF-kB activity Assay
- UV NF-kB Induction Assay
- Scratch Assay
- Comet Assay
- Histamine Assay
- Lactate dehydrogenase (LDH) release Assay
- Dihydroethidium (DHE)

3D Skin-Model



Assays:

- Phototoxicity Assay
- Tanning/ Whitening Assay
- Epidermal Barrier Function
- Skin Corrosion
- Skin Irritation
- Skin Regeneration
- Skin Inflammation
- Multiplex Cytokines Assay
- Cytotoxicity Assay
- MTT Assay

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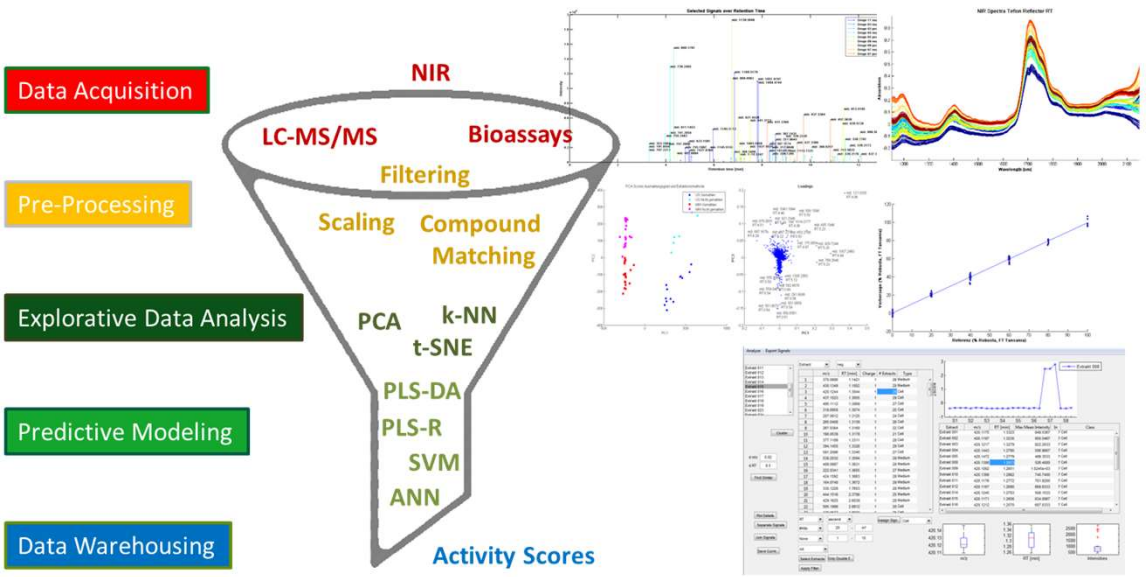
Data Correlation and Output



- Screening for activities
- Identification of activities
- Identification of MoA
- Quantification of compounds
- Optimization of extraction
- Cosmetic claim confirmation
- Product safety assesment

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Story of Success – MoA Canephron

Identification of the Mode of Action
of
Bionorica Canephron N

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Anti-inflammatory and cytoprotective polypharmacology of Canephron N reveals targeting of the IKK-NF-κB and p38-MK2-RIPK1 axes

Marija Milosevic [c], Alexander Magnutzki [c], Theodor Braun [c], Shah Hussain [c], Thomas Jakschitz [c], Martin Kragl [d], Michael Soeberdt [d], Bernhard Nausch [d], Günther K. Bonn [c,*], Lukas A. Huber [a,c,**], Taras Valovka [a,b,**]

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Herbal medicines
Urinary tract infection
Inflammation
Nuclear transcription factor kappa B
Necroptosis
Receptor-interacting serine/threonine protein kinase 1

ABSTRACT

Urinary tract infections are among the most frequently occurring forms of infection, and inflammation and tissue damage contribute significantly to symptoms, e.g., dysuria and urge. Canephron N is an orally bioavailable herbal medicine with anti-inflammatory, spasmolytic, anti-adhesive, and anti-nociceptive therapeutic effects that is approved for the treatment of uncomplicated urinary tract infections. Here, we used renal tubular epithelial HK-2 cells to study the anti-inflammatory and cytoprotective effects and molecular mechanisms of its active component, BNO 2103. BNO 2103 suppressed nuclear factor kappa-light-chain-enhancer of activated B cells (NF-κB) activation by lipopolysaccharide (LPS) and tumor necrosis factor alpha (TNFα) and prevented inhibitory κB kinase (IKK)-dependent phosphorylation and degradation of inhibitor of nuclear factor kappa B alpha (IκBα). BNO 2103 also suppressed the inflammation-specific S536 phosphorylation of the NF-κB subunit p65 and the production of a specific set of inflammatory cytokines. Unlike other NF-κB inhibitors, BNO 2103 demonstrated cytoprotection against TNFα-induced cytotoxicity. Our data suggest that BNO 2103 acts primarily through the mitogen-activated protein kinase p38 (p38 MAPK)-MAPK-activated protein kinase 2 (MK2) axis by promoting receptor-interacting serine/threonine protein kinase 1 (RIPK1) phosphorylation at S320. Simultaneously, it suppresses S166 autophosphorylation and subsequent activation of RIPK1, which is required for apoptotic and necroptotic responses to TNFα. This study confirms Canephron N as an effective alternative to traditional anti-inflammatory drugs and provides initial evidence of its ability to inhibit apoptosis and necroptosis in the uro-genital system. It also presents a detailed pathway investigation that identifies the specific targets of Canephron N within the NF-κB signaling cascade.

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Collaboration Partners - Excerpt

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Phytopharmacy

Bionorica®

Bionorica® research

TMO

QUIMFA
La Química Farmacéutica S.A.

Phytocosmetics

CURA
COSMETIC COMPETENCE

TRABZON BELEDİYESİ 1868

WELEDA
Seit 1921

ERBAGIL®

Phytonutrition

Ricola®
From Switzerland

Red Bull

P80

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