Green Pharmaceuticals from Lignin

Imagine a future, where pharmaceuticals are derived from wood waste, not petroleum … Green and bio-based pharmaceuticals represent a paradigm shift in the pharma industry, where sustainability and eco-friendliness are paramount. By leveraging novel innovative approaches in green chemistry and biotechnology it is possible to deliver new therapeutic agents with a reduced ecological footprint. This holistic approach aligns with the growing global demand for sustainable solutions and is poised to create a treasure trove of renewable medicines for the future.

BACKGROUND
The demand for sustainable and economically viable sources of pharmaceutical compounds is on the rise. Traditional methods rely heavily on petrochemicals, leading to environmental pollution and resource depletion. By utilizing lignin, a major component of biomass, as a starting material a greener approach to drug synthesis becomes possible. Lignin offers a rich source of aromatic compounds that can be transformed into complex pharmaceutical scaffolds, providing a renewable alternative to fossil-based precursors.

TECHNOLOGY
Our approach combines expertise in catalysis, green chemistry, and pharmaceutical sciences to achieve our objectives. We will design and optimize catalytic reactions for the synthesis of target compounds, focusing on atom-economy and sustainability. Alternative solvents, including deep eutectic solvents, can be applied to improve reaction efficiency and reduce environmental footprint. Biological screening assays are employed to evaluate the pharmacological activity of synthesized compounds, guiding further optimization and development. Economic assessments will consider the overall cost-effectiveness and scalability of the proposed synthetic routes, ensuring their practical applicability in industrial settings.

OFFER
acib extends an exclusive opportunity to co-develop

- Novel catalytic methods for the synthesis of pharmaceutical compounds from lignin-derived platform chemicals.
- Identification of lead compounds with promising biological activity against infectious diseases, inflammation, and cancer.
- Optimization of reaction conditions and solvent systems to enhance green chemistry metrics and process sustainability.
- Demonstration of the economic feasibility and scalability of the proposed synthetic routes, contributing to the advancement of lignin valorization and biorefinery processes.

Intellectual property (IP) generated in this project seamlessly transfers to you, our investor/industrial partner. Take the lead in spearheading the future of sustainable and cost-effective bio-based pharmaceutical production with acib!

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DEVELOPMENT STATUS:
TRL 4 (Technology validated in lab)

KEYWORDS:
Bio-based pharmaceuticals
Sustainable production
Active pharmaceutical ingredients (APIs)
Green Chemistry
Platform Chemicals
Anti-Infectives
Renewable Resources
Circular Economy

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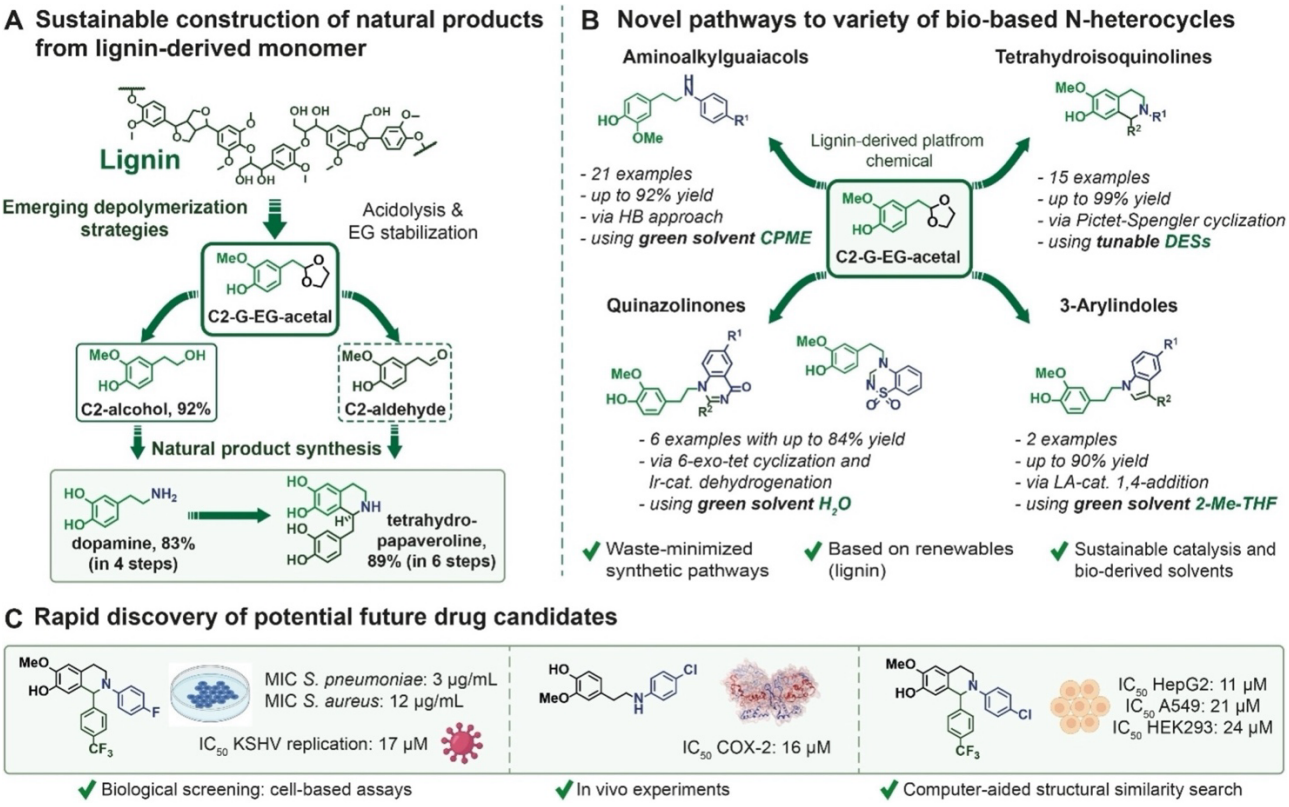

Figure 1 from Angew. Chem. Int. Ed. 2024, 63, e202308131 by Katalin Barta Weissert and al.