

SUSTAINABLE PREPARATION OF WHO ESSENTIAL MEDICINES BY MECHANOCHEMISTRY

Evelina Colacino

ICGM, Univ Montpellier, CNRS, ENSCM, 34293 Montpellier, France.

evelina.colacino@umontpellier.fr

Abstract

Despite ongoing efforts to lessen the environmental impact of active pharmaceutical ingredient (API) production, the use of organic solvents—responsible for 75% of energy consumption—remains a key component in many manufacturing processes. Solvent-free (or low-solvent) synthesis through mechanochemistry^{1,2} offers a solution that adheres to several Green Chemistry Principles³ and holds great promise as a sustainable technology for the production of value-added chemicals, pharmaceutical fragments, functionalities, and APIs.

This presentation explores case studies that demonstrate the use of mechanochemical processes to produce World Health Organization (WHO) essential medicines at various scales. By applying green chemistry metrics,⁴ we highlight how mechanochemistry provides an eco-friendly and cost-effective alternative for the production of green pharmaceuticals, contributing to the larger goal of building a more sustainable planet.⁵

Keywords: Mechanochemistry, Active Pharmaceutical Ingredients, Rearrangements, Green metrics.

References

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