Title: Synthesis of Pharmaceutical Drug Precursors via Reductive Friedel-Crafts Reaction

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KEYWORDS: Reductive, Friedel craft reaction, Pharmaceutical, Anaesthetic
DOMAIN: Chemistry

SUMMARY:
The present invention is regarding the reductive Friedel craft reaction, a regioselective reaction where alkylation takes place at a particular place of aromatic compound. Here the reaction translates amines, arenes, and ketoacid compounds into precursors for commercially significant pharmaceutical compounds e.g. anesthetic drugs such as ibuprofen, adiphenine, piperidolate, proadifen, asimadoline and felbinac, etc. The products obtained through reductive Friedel craft reaction are polyakylated and polyarylated carbonyl compounds. It is a forward approach towards green and sustainable development of methylation by utilizing inexpensive transition-metal-free catalyst systems, mild chemicals, and readily available methylating agents.

ADVANTAGES:
1. The reaction enables the synthesis of a diverse array of alkylated and arylated compounds through the same reaction process.
2. Uses economical reagents and mild reaction conditions.
3. The compounds can serve as independent precursors to manufacture pharmaceutically compounds.
4. The approach is deployed in an atom-economic, step-economic, and metal-free condition.
5. Ease of Scaling up to a larger scale.

APPLICATION:
1. Synthesis of pharmaceutically significant precursors for the production of commercially available drugs.

SCALE OF DEVELOPMENT: The chemical reaction to obtain the precursor is performed at a lab scale

TECHNOLOGY READINESS LEVEL: TRL 3

IP STATUS: Indian Patent Application No. 202311051075