

GMK Research Laboratories Pvt. Ltd. is a premium contract research organization providing cost effective chemistry solutions to global customers of diverse origin varying from Pharmaceutical, Agrochemicals and Biotech companies to Academic Researchers.

Our core team has in-depth knowledge and experience of delivering a broad class of chemistry services; ranging from hydrophobic compounds (Lipids/Sphingolipids, Steroids, Terpenes) to hydrophilic compounds (Carbohydrates/Oligosaccharides, Nucleosides/Nucleotides, Amino acids/Small Peptides) apart from conventional Med. Chem. type Building Blocks/Scaffolds/Focus Libraries (Heterocyclic compounds, fused Heterocycles and Spirocycles). Furthermore, we also have expertise in the synthesis of natural products and their analogues (Alkaloids and Macrolides) and site specific labeling with cold isotopes (D, ^{13}C and ^{15}N). Our chemists are well versed with asymmetric synthesis emanating from chiral pool/chiral auxiliary/chiral catalysis approach.

We employ the state of art analytical techniques for unambiguous structural elucidation and have adequate lab infrastructure to support chemistry synthesis.

Our values are Respect, Team effort, Transparency, Integrity, Confidentiality, and Safety. We are a socially responsible and environmentally conscious research organization.

Our Business Offerings are through:

- Full Time Equivalent (FTE)
- Fee For Service (FFS)
- Milestone Based

Mission

To be the acknowledged leader and preferred partner in providing value added chemistry solutions to our customers to achieve their goals in fast evolving and yet demanding global environment.

Vision

To be a process driven organization that develops and delivers innovative and cost effective solution to our customers, consistently outperforms our peers, produces predictable returns for our shareholders and provides dynamic and challenging environment to our employees.

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Services

Medicinal Chemistry / Synthetic Chemistry

Our scientific team has a thorough understanding of synthetic organic chemistry and is capable of handling a variety of chemistry and biotechnology projects over a diverse chemical structure class.

Our chemists routinely perform synthesis from 1 mg to 1 Kg scale with emphasis on synthesis that involves economical, environmentally and readily available starting materials and reagents. We believe in timely delivery with uncompromised quality. All target products and intermediates are typically characterized using state-of-the-art analytical techniques (Infrared spectroscopy, ^1H , ^{13}C , ^{19}F , & ^{31}P NMR, 2D-NMR techniques such as ^1H - ^1H COSY, HMBC, HSQC, NOE difference, LC-MS and HPLC).

Our services for medicinal chemistry/synthetic chemistry include:

- Hit to lead optimization employing standard SAR approaches
- Synthesis of focused Libraries (small and mid size), experienced with scavenger approach for improving purification and isolation for larger set
- Synthesis of Reference Standards; Building Blocks; Analogues; Intermediates and specially designed Lead Molecules

Chiral Synthesis

Our chemists are well experienced with asymmetric synthesis using either chemical or enzymatic transformations at mg to multi gram scale. The enantiomeric purity of each deliverable is adjudged through specific rotation as well as using chiral HPLC methods. In case of unknown substances, we perform synthesis in racemic series in parallel to avoid any ambiguity. Our expertise in this area is the following:

- Enantiospecific synthesis from chiral pool approach using commercially available amino acids, Terpenes and Carbohydrates
- Synthesis of compounds using chiral auxiliary approach
- Asymmetric catalysis e.g. Sharpless's Epoxidation, Dihydroxylation (AD)/Aminohydroxylation (AA) & Jacobsen's hydrolytic kinetic resolution, and Reduction reactions (e.g. CBS catalyst and Noyori's catalysis)
- Enzymatic acylation using immobilized Lipase
- Conventional resolution using acid/base approach

Specialized Chemistry

Our core team has in-depth knowledge and experience of delivering a broad class of chemistry services; ranging from hydrophobic to hydrophilic compounds with or without chromophores. Our offerings in this area include:

- Synthesis of Lipids/Sphingolipids via *de novo* synthesis or functional group manipulations
- Synthesis of Nucleoside bases and their elaboration to nucleosides via glycosylation and further transformation to Nucleotides (mono-phosphates, tri-phosphates etc.)
- Synthesis of Imino sugar, Glycosyl acceptors/donors, Oligosaccharides - tri and tetra and functional group transformations on carbohydrates
- Functional group transformation on Steroidal skeletons
- Synthesis of novel Peptides using solution phase as well as solid phase
- Multistep stereo-selective & specific synthesis of natural products (Macrolactone/Macrolides and Alkaloids) and their analogues having several asymmetric centres
- Site specific labelling of compounds with cold labels (D, ^{13}C and ^{15}N)
- Conjugation of small molecules with Biotin or other fluorescent probes
- Organometallic reagents -Synthesis of catalysts and precatalyst using Rh and Pd metals

Process Chemistry

We provide services in the area of Process chemistry by integrating Analytical tools (HPLC/GC) for the preparation of standards/intermediates. We, typically, undertake development and optimization of a new process or improve upon the already existing process by screening various routes and then selecting the most viable route. Our process research Services include:

- Route selection and Process development
- Synthetic feasibility and Scale up
- Process improvement and optimization
- Evaluation of scalability and Safety of the Process
- Development of Analytical methods and their transfer

Analytical Chemistry

- Determination of physicochemical properties of small molecules (Solubility, Log P and Log D) using HPLC/LCMS based methods
- Forced Degradation Studies for drug substances
- Method Development and Validation (System Suitability, Specificity, Precision, Linearity, Accuracy, Limit of Quantification Detection)
- Structural elucidation of unknown chemical substances
- Impurity profiling according to customer's requirement including structural elucidation of unknown impurities