

Heterocyclic Small Molecule Conjugates And Their Therapeutic Application In Cancer Therapy

Intellectual Property:

IP: IN 202531048955

TRL: 5

Category of the invention:

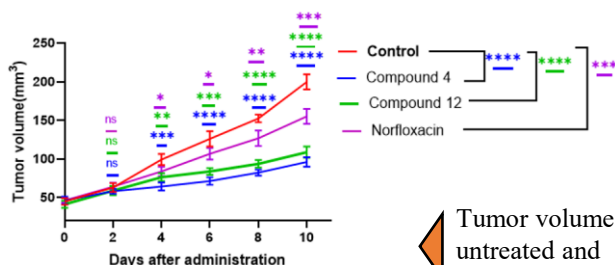
- Anti-Cancer Drugs
- Drug Repurposing
- DNA-Targeting Agents

Applicant/Innovator:

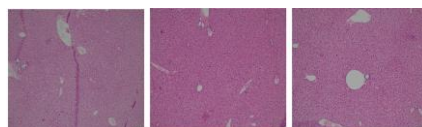
Chittaranjan National Cancer Institute

TECHNOLOGY:

The invention discloses a new class of anticancer hybrid molecules formed by conjugating the widely used antibiotic norfloxacin with DNA-binding heterocyclic scaffolds. These conjugates exhibit potent anticancer activity, enhanced DNA-binding properties, and reduced systemic toxicity, offering a promising platform for targeted cancer therapy, particularly for breast cancer, liver cancer, and lymphoma. Developed through a repurposing-remodeling strategy, this innovation leverages established pharmacophores to accelerate drug development with improved safety and efficacy profiles.



Tumor volume in untreated and treated group



Histopathological analysis of liver

PROBLEM ADDRESSED

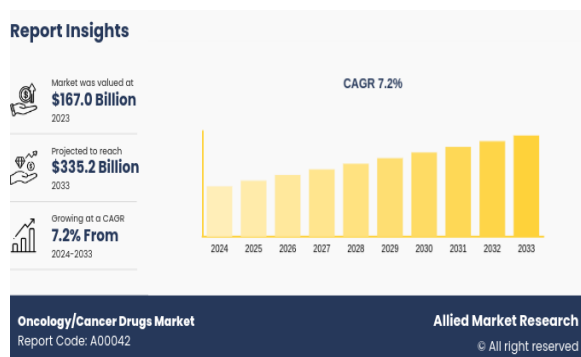
Current cancer therapies face:

- Poor target specificity
- High systemic toxicity
- Drug resistance (especially MDR via efflux pumps)
- Limited efficacy in advanced/metastatic stages
- High costs of targeted biologics

ADVANTAGE

- Superior cytotoxicity compared to Norfloxacin and Tamoxifen
- Low systemic toxicity in mice models (up to 12 mg/kg)
- Dual-action mechanism: Topoisomerase inhibition + DNA intercalation
- Efficient synthetic route (3–4 steps, high yield, low cost) Uses readily available starting materials
- Compatibility with click chemistry (modular drug development)

MARKET POTENTIAL



Ref: alliedmarketresearch.com

USP

- Repurposing-remodelling of Norfloxacin into a potent anticancer scaffold
- First-in-class hybrid conjugates with DNA-interacting pharmacophores
- Effective in in vivo breast cancer models with cell cycle arrest at G0/G1 and apoptosis induction
- Outperforms FDA-approved drugs like Tamoxifen and Sorafenib in key metrics
- Enables personalized therapy via molecular targeting and biomarker-based use

Reach Us:

Dr. Amaresh Panda

Lead, Technology Transfer Office, KIIT-TBI
amaresh@kiitincubator.in | +91-9819053408

Dr. Jyotsnarani Jena

Associate, Technology Transfer Office, KIIT-TBI
jyotsnarani@kiitincubator.in | +91-9861107688

tto@kiitincubator.in
tto.kiitincubator.in