

Tentative Outline

Special Thematic Issue for Current Drug Discovery Technologies

Discovery and Development of New Anti-infectives: Perspectives and Prospectives

Guest Editor: Vijay Kothari

Aims & Scope:

Infectious diseases have plagued mankind since ancient times. Ancient civilizations relied largely on a variety of herbal and herbomineral formulations to combat infections. Later twentieth century saw the dawn of antibiotic era. Antibiotics helped us greatly in combating pathogenic microbes, however emergence of **antimicrobial resistance (AMR)** and its promiscuous exchange among pathogenic populations has brought us to a situation, where we are left with a limited number of effective antibiotics, and already quite a few pan-drug-resistant strains have started posing a formidable health challenge before us. Infections caused by resistant strains and microbial biofilms are causing a large number of deaths throughout the globe, and concerted efforts at global scale has become necessary [<https://amr-review.org/>].

Discovery of new antimicrobial agents is failing to keep pace with rapid emergence of AMR among pathogenic microorganisms, and there is a realistic threat of mankind losing this battle. Conventional bactericidal antibiotics exert strong selection pressure on target microbes, leading to rapid emergence of resistant phenotypes. Hence besides continuing discovery of new bactericidal antibiotics, alternative approaches also needs to be pursued actively. Identifying new targets (e.g. quorum sensing, riboswitches, transcriptional regulators, metal homeostasis, etc.) in pathogenic microbial cells/ populations, and developing novel anti-infective/ anti-pathogenic agents is the need of the hour. This is about **a paradigm shift from targeting pathogen to targeting pathogenicity**.

In the above mentioned context, this thematic issue invites review papers from researchers across the globe working in the area of discovery and development of novel anti-infective agents, with a **particular focus on pathogens of high/ critical priority listed by WHO** [http://www.who.int/medicines/publications/WHO-PPL-Short_Summary_25Feb-ET_NM_WHO.pdf], on subtopics listed below.

Keywords: Antimicrobial Resistance; Drug development; Anti-infective; Virulence; Anti-pathogenic

Subtopics:

- Locating novel targets (e.g. riboswitches, transcriptional regulators, quorum-sensing machinery, etc.) for development of new antimicrobials/ anti-pathogenic agents
- Use of 'omics' tools in anti-infective discovery
- Development of formulations which besides targeting the pathogens, may modulate the host immune response positively, aiding it to clear the infection rapidly
- Mining traditional (Alternative and Complementary Medicine) folklore medicine for development of new antimicrobials through *reverse pharmacology* approach
- Non-antibiotic means of controlling infectious agents e.g. electromagnetic, acoustic approaches, plasma torch, etc.
- Use of simpler model organisms like *Caenorhabditis elegans*, Zibrafish, etc. in anti-infective research for narrowing down the number of 'hits' to be subjected to animal experiments/ clinical trials
- Tackling biofilms, and new methods to study them (e.g. those based on culture impedance), which can aid high throughput screening for discovering potential anti-biofilm agents
- Tackling experimental issues like non-linear dose-response curve, new protocols, etc. in the drug discovery process
- High throughput screening for rapid identification of potent leads
- *In silico* approach in anti-infective discovery

Schedule:

- ✧ Manuscript submission deadline: December 2018
- ✧ Peer Review Due: Jan 2019
- ✧ Revision Due: Feb 2019
- ✧ Announcement of acceptance by the Guest Editor/ Journal office: March 2019
- ✧ Final manuscripts due: April 2020

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