Infectious diseases have plagued mankind since ancient times. Ancient civilizations relied largely on a variety of herbal and herbomineral formulations to combat infections. Later the 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 a global scale are 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 the continuous discovery of new bactericidal antibiotics, alternative non-antibiotic approaches also need to be pursued actively. Identifying new targets (e.g. quorum sensing, riboswitches, transcriptional regulators, metal homeostasis, etc.) in pathogenic microbial cells/ populations, and new leads for developing novel anti-infective/ anti-virulence agents is the need of the hour. This is about a paradigm shift from targeting pathogen to targeting pathogenicity.

While researchers throughout the globe are focusing their antimicrobial research specifically on WHO (World Health Organization)/ CDC (Centers for Disease Control)- listed antibiotic-resistant bacteria [https://www.cdc.gov/drugresistance/ biggest-threats.html] [https://www.who.int/news-room/detail/27-02-2017-who-publishes-list-of-bacteria-for-which-new-antibiotics-are-urgently-needed], antibiotic-resistant fungal and protozoan pathogens remain equally grave challenges. Discovery of new effective antiviral agents is still more daunting task. Fulfilling the criteria of ‘selective toxicity’ becomes much more difficult while developing new antiviral/ antifungal/ anti-protozoal agents, as compared to antibacterials.

We may never fully win the battle against microbial infections, but a lot needs to be done to ensure that we do not lose this battle. This thematic issue features review papers from researchers working on varied aspects of discovery and development of novel anti-infective agents. It will be an informative and useful read for all stakeholders. Besides the contributing authors and the publisher, I sincerely thank the reviewers who selflessly devoted their valued time in fulfilling their role as Sentinel of Scientific Literature.