Infectious diseases are still one of the main causes of mortality and morbidity worldwide. In addition, antimicrobial resistance is a well-recognized global threat; hence, necessitates the development of tough policies to control the spread of disease-causing microorganisms coupled with antimicrobial stewardship strategies and new therapies to reverse this process. In order to fight against microbial infections, we need new antimicrobials. Much effort has been infused by the scientific community in the past to the search of new and potential antimicrobials. Researchers have explored antimicrobials based on plants, microorganisms, and even synthesized new compounds. This issue deals with the important developments related to the topic of antimicrobials, especially, plant-based antimicrobials, β-lactamase inhibitors, new synthetic drugs, and also about the target based drug delivery system in case of chemotherapeutic agents.

Singh et al. have discussed the importance of plant antimicrobials of the past decade (2007-2017). As plants are the major contributors of vast number of compounds, the plants have remained the indispensable source of medicine, and thus plant based antimicrobials are important to be considered. Most of these compounds are produced as secondary metabolites and their medicinal properties may be beneficial for the human being also. The synthetic chemistry has offered various molecules but most of these are directly or indirectly related to some plant source. In the current review, they have presented the plant-based antimicrobials reported between 2007 to 2017. Genera where most of the researchers have concentrated during this period includes, *Thymus*, *Helichrysum*, *Quercus*, *Jatropha*, *Gnaphalium*, *Acalypha*, and *Lippia*. Some other miscellaneous gene on which one or two reports are available include, *Conocarpus*, *Chamaesyce*, *Bucida*, *Boehmesia*, *Pancratium*, *Artemisia*, and *Cinnamosma* [1].

Wang et al. emphasized the development of β-lactamase inhibitors as potential antimicrobial agents. Horizontal transfer of the genes encoding metallo-β-lactamases (MBLs) among Gram-negative bacteria pathogens has led to the emergence of drug-resistant pathogens, which now represent a major threat to the human health. It is urgent to develop new antibiotic agents to fight against antibiotic resistance. Metallo-β-lactamases (MBLs) are an important class of Zn(II)-dependent enzymes that can hydrolyze almost all β-lactams and render bacteria resistant to antibiotics in the clinic. To date, there are no clinically available MBL inhibitors although a large number of MBL inhibitors have been identified. In this review, they have highlighted the recent developments in small-molecule MBL inhibitors in the past decade [2].

Kaur et al. synthesized and characterized a new series of diazenyl chalcones by combining the azo and chalcone moiety together and evaluated them for antimicrobial and antioxidant potential. Some of the derivatives had shown high antimicrobial and antioxidant activity as compared to the standard drugs and hence presented new lead compounds for the development of novel antimicrobial agents [3].

Conventional chemotherapeutics lack the specificity and controllability, thus may annihilate healthy cells while attempting to annihilate cancerous ones. Newly developed nano-drug delivery systems have shown promise in delivering anti-tumor agents with enhanced stability, durability, and overall performance; especially when used along with targeting and triggering techniques. Ahmed et al. traced back the history of chemotherapy, addressing the main challenges that have encouraged medical researchers to seek a sanctuary in nanotechnological-based drug delivery systems that are grafted with appropriate targeting techniques and drug release mechanisms. A special focus will be paid towards acoustically triggered liposomes encapsulating doxorubicin [4].

As a whole, all these papers illustrate the versatility of this topic and highlight the importance of developing new prospection tools to advance the discovery of new compounds.

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