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***Withania somnifera*: Can it be a Therapeutic
Alternative for Microbial Diseases in an Era of
Progressive Antibiotic Resistance?**

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EDITORIAL

Resistance to antibiotics poses a serious and sometimes deadly challenge to the treatment of severe bacterial infections, in particular in developing countries. Antibiotic resistance causes biological cost by reducing fitness of resistant strains, which can minimize the spread of resistant bacteria. Microbes that are resistant to multiple antimicrobials are called multidrug resistant (MDR) (Iqbal *et al.*, 2015a,b).

Withania somnifera (WS), widely known as ashwagandha, is an Ayurvedic herb that has recently been investigated for its antimicrobial activity. Although used as a broad-spectrum remedy in India for centuries, WS has only recently been under investigation in laboratory settings. WS is categorized as an herbal supplement for its anti-inflammatory, antitumor, antistress, antioxidant, immunomodulatory, hemopoietic, and rejuvenating properties. These hypothesized healing properties have led to widespread use of WS in Ayurvedic medicine, and it has been studied as a treatment for various health conditions. As Ayurvedic practices, such as the administration of herbs, gradually acquire more support in primary care, the need to evaluate the use of herbal substances in the management of specific conditions becomes more acute.

The emergence of antibiotic-resistant bacteria must be considered one of the most frightening consequences of microbial evolution in the last 2 decades. The physicians prescribe broad spectrum antibiotics without antibiotic susceptibility test. There is no systematic national surveillance of antibiotic resistance and insufficient data is available to quantify the problem (Abdul *et al.*, 2008). Plant derived products can be tested to determine antibacterial activity (Hussain *et al.*, 2016; Shahzad *et al.*, 2017) that can be used to treat infectious diseases.

In this issue, Shoaib *et al.* investigate the antimicrobial potential of some solvent extracts of *Withania somnifera* leaves against different

strains of bacteria and fungi. They used agar well diffusion method to determine antibacterial activity of crude extracts of *W. somnifera* against gram positive, gram negative bacterial and agar diffusion method to determine antifungal activity against fungal strains. All tested plant extracts, showed varying zones of inhibition against bacteria and fungi tested. The results demonstrated that this plant has good medicinal potential, and it needs further phytochemical exploitation to isolate phytochemical constituents having antibacterial and antifungal activities.

Although well conducted, there are some limitations to the present work. The molecular methods can be employed to detect antibiotic resistance. Moreover, the types of bacteria tested were limited to 5 strains. More attention is needed to recognize and measure trends in resistance internally. There is an immediate need to step out and test the effectiveness of plant products against the emerging pathogens. The development of non-antibiotic alternatives for mild infections is just one strategy to combat antibiotic resistance. Transition from antibiotics to non-traditional treatments poses real clinical challenges that will not be easy to solve.

CONFLICT OF INTEREST

All the authors have declared that no conflict of interest exists.

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