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LETTER TO THE EDITOR

Beyond antibiotics, is there any hope for new alternatives?

Emad Mohamed Abdallah

Department of Laboratory Sciences, College of Science and Arts, Al-Rass, Qassim University, Saudi Arabia

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Dear editor,

In recent years , the interest in natural products and plant extracts is growing; and recommend - ed as an alternative source of medication , not only in developing countries , but also in devel - oped countries either . Synthetic drugs are still dominated in modern medicine , most of the synthetic drugs have serious side effects , In particular , the antibiotics that became a real dilemma , and gradually fail in front of infectious diseases . So , why physicians until now rely on these antibiotics ? And is there any competitor alternative?

I think that this is because modern medicine does not believe in the effectiveness of traditional medicine and consider it as an inferior or primitive form of healthcare systems. Undoubtedly, the discovery of antibiotics in the 1950s was one of the greatest remedies that man has attained; this miraculous drug saved millions of lives from some dangerous infectious diseases, but we forget that microbes have flexible metabolic power able to acquire, mutate and adapt with such antibiotics of limited capacity [1]. Recently, modern medicine totally depends on antibiotics, not only in the treatment of infectious diseases, but also in different branches of medicine like surgery, dentistry, organ transplantation, chemotherapy, among others. Yet this miraculous drug witness a dramatic collapses all over the world and failed to treat infectious diseases, threaten the life of all humanity as never before, because we are not only suffering from outbreaks of antibiotic-resistant pathogens, but also from the emerging of superbugs which are highly resistant to almost all classes of antibiotics. This threat is much dangerous than wars, famine and natural disasters such as hurricanes, floods, earthquakes, tornadoes and volcanic eruptions. In this year, the WHO has published a list of a global priority pathogens of antibiotic-resistant bacteria of urgent need for new alternative treatment, classified there in to three categories; critical (*Acinetobacter baumannii*, *Pseudomonas aeruginosa* and Enterobacteriaceae), high (*Enterococcus faecum*, *Satphylococcus aureus*, *Helicobacter pylori*, Campylobacter, *Salmonella spp.* and *Neisseria gonorrhaeae*), medium (*Streptococcus pneumonia*, *Haemophillus influenza* and *Shigella spp.*), while *Mycobacterium tuberculosis* was excluded from this list because it was already a globally established priority [2]. This reflects how bad the situation is, particularly if compare it with the 1960s and beyond, the golden age of antibiotics where most of these pathogens were under control. And worse, the pharmaceutical companies may drop out production of new antibiotics if there is no encouraging revenue. Who wants to invest in production of highly costly, time consuming (many years under clinical testing phases) and short-term drug?

To be on the right track, I think we should firstly confess of the triumph of bacterial pathogens over antibiotics. Then, secondly, search for new alternatives, and what alternative is much better than medicinal plants? That can develop an endless of phytochemical compounds some of them were used in ancient civilizations. I agree that it is

Contact Emad Mohamed Abdallah emad100sdl@yahoo.com Department of Laboratory Sciences, College of Science and Arts, Al-Rass, Qassim University, Saudi Arabia.

difficult to use herbs in raw form like the primitive human way, but we can use the modern technology, biotechnology and nanotechnology to innovate new form of effective antimicrobial drugs derived from medicinal plants. Globally, interest in searching for antimicrobial activity of medicinal plants is growing and each year thousands of medicinal plants are investigated, numerous antimicrobial phytochemical principles of effective antibacterial activity competitor to antibiotics are isolated [3]. It would be advantageous to urge the interested institutions, organizations and pharmaceutical companies to invest in medicinal plants as an alternative source for new antimicrobial drugs, which are available, lower in cost and have minimum side effects compared to the antibiotics. I recommend also focus on the synergistic effects of some medicinal plants with antibiotics which may alter the mode of action of the antibiotics and may revive these failed antibiotics. I hope also increase the international interest, encourage and support the research efforts in natural products, medicinal plants, and ethnopharmacological studies. Thirdly, Humanity must be well aware that we cannot totally eradicate infectious diseases forever, because simply microorganisms, particularly bacteria survived since billions on years ago and will live until the end of life on earth. However, I believe science can control the infectious diseases, but I believe that our battle between human and pathogens will never end, so let us think out of the box and go back to the Mother Nature to control the spread of difficult-to-treat infectious diseases and save the life of the humanity. It is a call to action, it is a call to save our life before we regret when the disaster come!

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