

Drug Resistance: Challenges and Ayurveda Solutions – Review Study

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Abstract

Antimicrobial resistance and anticancer medicine resistance has been the challenge to the medical fraternity. There are different theories postulated for developing medicine resistance, that has resulted in the debate regarding the efficacy of the medicine; there has been increasing concern as the time taken for developing resistance is getting shorter and the time for development of a molecule has remained constant or increasing. This resulted in medicinal resistance within a few years of its use. Development of medicine is based on the medical philosophy of Robert Koch's that postulates that the disease is caused by external biological agents not visible by naked eyes that are termed as pathogen. This implies that the disease occurs due to external agents; but the Ayurveda outlook is bit different. The disease is result of change in body homeostasis that occurs due to external or internal or environmental factors. This is often referred as Holistic approach of disease. Owing to the development a detailed analysis – study – research work is required for using Ayurved medicine & Ayurvedic principles of management as it has been known for its holistic approach. This can be a possible answer to neo-challenges.

Keywords: Antimicrobial resistance, anti-cancer medicine, anti-cancer medicine resistance, ayurved, holistic medicine, homeostasis, general well being

INTRODUCTION

Drug resistance is the neo-challenge to the medical world that is resulting in not getting adequate & desired effects to heal the disease and on the other hand produces altered drug reaction & sequel. Before few decades it was believed that drugs resistance is applicable to antimicrobials but in recent years it has been documented in drugs used for managing cancer & non-communicable diseases. There were different theories postulated for antimicrobial resistance i.e. the most important theory amongst them is natural selection theory that states the survival of fittest in the system and the sensitive strain of microbe vanishes with the first use of antimicrobials. Chemotherapeutic use ought to be changed with more natural & holistic herbo-minerals, phytochemical or nutraceuticals for managing communicable & non-communicable illness as first line therapy and preserving the chemotherapeutics for higher level management [1–3]. This shift is the need of the time for better quality of life and preventing developing drugs resistance.

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The Ayurveda approach to health & disease is a bit different from the contemporary approach. The primary evidence in the classics has enough evidence that the knowledge of microbe & microbial illness was there at the time of documentation of these treatises; the concept of immunization & vaccine was also there in Sushruta Samhita (in context of Alarka Visha management) [1]. The description of Janapadodhwansa & Prasanga effect in communication of disease [2]. Acharya's Charaka definition of disease narrates that disease is alteration – pathological change due to amalgamation of Doshas & Dushyas resulting in changes in Dhatus [3, 4].

RATIONALES

There is increasing drug resistance in all types of communicable drugs. It is observed that many diseases that were believed to be eradicated were occurring in new forms. The recent example of Cholera outbreak in Gujarat (there has not been single disease of cholera reported in last decade but in 2024 cholera cases have been reported) [5], there were many other examples (1994 plague outbreak in Surat Gujarat), etc. The diseases like tuberculosis, respiratory infection, malaria, abdominal infections, skin infections, etc. [6].

There were different theories postulated for developing drug resistance. The first theory suggests that non-judicious use of self-medication leads to developing resistance [7]. The second theory suggests that discontinuing medicine without medical advice or not taking medicine is scheduled dosage may also result in drug resistance. The third theory is survival of fittest that suggests that the new infection spreads by resistant strains only.

Holistic management with medicine that improves Host defense can be the medicine for tomorrow [8–10].

REVIEW OF LITERATURE

There is a difference of opinion regarding the concept of illness that is referred to as medical philosophy. As per the philosophy of contemporary system the disease is result of changes in body internal atmosphere caused by the external agent known as microbes; whereas Ayurveda narrates that the disease is result of change in host factors – homeostasis due to external or internal factors. Furthermore, the interaction of Nidan – Doshas – Dushyas results in manifestation or non-manifestation of disease [4]. This implies that the cause of illness is due to changes in internal (Doshas) that occur due to external (bahya) or internal (abhyantar) causes.

In the contemporary medical system, the advancement of rational medical system leads to invention of antimicrobials. It is observed that the development of antimicrobials usually takes one & half decades to two decades, but the resistance was observed for the first gen antibiotics within two decades of its clinical use; the second gen antimicrobials developed resistance in less than a decade, similarly the third & fourth gen antibiotics resistance within a very short span of its use (Figure 1) [5].

It has been observed that resistance towards medicine is not limited to anti-microbials, but resistance was observed in other medicines that are chiefly used to manage metabolic disease, non-communicable disease and cancer. These changing trends and development raised questions about managing medical illness globally. Developing any new molecule usually requires long time (it may take even two decades) but resistance develops in very short span (in a few cases it is observed within few years less than half decade) [5].

The possible way out is the Ayurveda; ayurveda with its holistic approach and whole drugs (aqueous extract or whole drug) based medicine is observed to be well-tolerated and resistance is usually not observed [11]. If the drugs used in proper manner this may be a medicine for the coming centuries. Holistic approach and understanding pathological process with concept of Shad Upakrama & Samprapti Vighatana Chikitsa can prove to be better option in healthcare [12]. It does not only reduce the cost of medical treatment but helps in achieving sustainable goals in the long run.

Resistance against is also observed in antineoplastic medicine also. The medicine used for treatment is developing resistance; till today there has been no report about the medicine for metabolic diseases, but it is observed clinically that these medicines does not have the desired effects.

AYURVEDA APPROACH TO DISEASE & MANAGEMENT

Disease is defined as the result of pathological changes in Dhatus; this is due to interaction of Nidan – Doshas – Dushyas and amalgamation and impartation of vitiated qualities of Doshas on to Dushyas

[6]. This is referred as Dosha – Dushya Sammurchana. Treatment is objected to correct the saamurchana and not mere the symptoms; few example – Virechana for Tamak Swasa, & Pakshaghata, Vamana for Rakta-pitta, Basti for managing Atisara and more [7].

Ayurvedic management has two different ways to manage medical condition. The first one is Upshaya – that is intended to provide relief in the presenting symptom–prompt relief and diagnosing the closely resembling disease; whereas Chikitsa corrects the pathologic process to restore normal homeostasis which is referred as Prakruti Sthapana in Charaka Samhita [8]. Ayurveda with its holistic approach can be used with specific objectives in managing the medical ailment [9].

Author has clinical experience in treating drug resistant tuberculosis, good clinical improvement has been observed in such patient. The treatment is objected with correcting digestive system – nutritional principle of tissues (Yakshma is Tridoshaja Vikar and presented with Dhatu-Kshya), improving host defense, control infectivity, pathological recovery and lastly improving longevity. This type of objectives ought to be set before planning medicine and appropriate medicine and medical procedure to be used for achieving complete wellbeing [10]. This approach is gaining importance especially in treating metabolic disease diabetes mellitus where individualized medication is used to achieve individualized glycemic control rather than maintaining it to reference values [11].

Medical World is in search of sustainable development goals–medicine and affordable medicine can only be possible provided by Ayurveda [12].

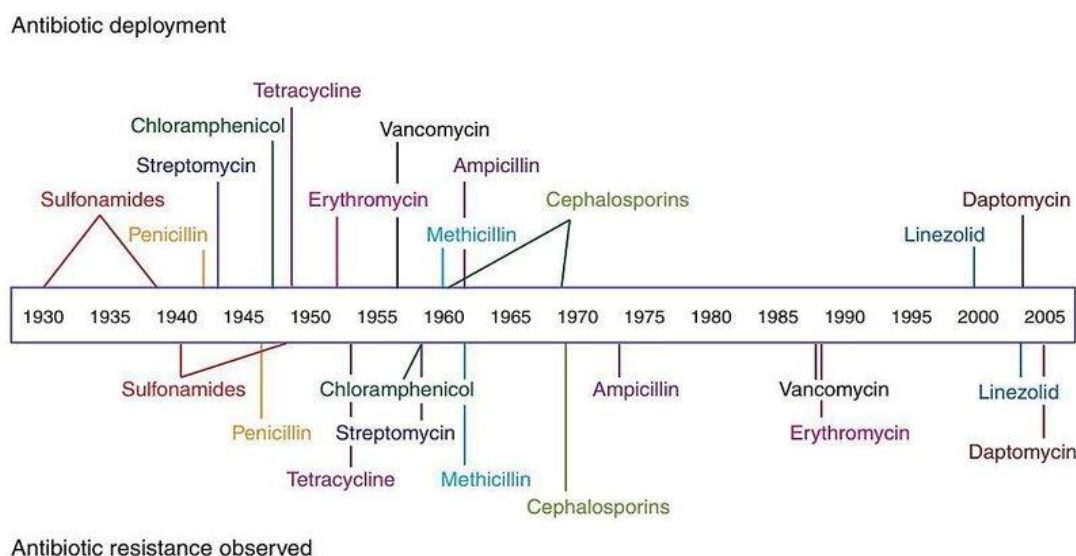


Figure 1. Antimicrobial development and resistance [12].

DISCUSSION

The growing problem of drug resistance to antimicrobial and anticancer treatments is becoming increasingly urgent. Resistance rates are rising, and the time it takes for drugs to lose their effectiveness is shrinking rapidly after their introduction. This poses a significant challenge for healthcare providers, as medications that are currently effective may soon become unusable, leading to complications in treating patients and worsening their health conditions. This scenario is particularly troubling considering the World Health Organization's Sustainable Development Goals (SDGs), which emphasize the need for accessible and affordable healthcare solutions.

In developed countries, medical professionals typically initiate pharmacological treatment only after confirming a diagnosis through empirical evidence. This cautious approach helps to prevent the misuse

of medications. In contrast, in developing nations like India, medications are often available over the counter (OTC), leading to a situation where individuals may self-medicate without proper diagnosis. Consequently, patients in both contexts often face unmanaged pain and suffering in the early stages of their illnesses, especially when definitive medical evidence has yet to be established.

Considering these challenges, exploring alternative treatment strategies could be beneficial. One promising avenue is the use of nutraceuticals and herbal remedies derived from Ayurveda. This traditional system of medicine emphasizes a holistic approach to health, focusing on prevention, overall well-being, and personalized treatment. Integrating Ayurvedic practices could provide effective options for managing health conditions that conventional medicine may inadequately address.

CONCLUSIONS

In summary, Ayurveda stands out as a potentially transformative approach to healthcare in the future. With its focus on holistic management and natural remedies, it offers viable alternatives for tackling the pressing issues of drug resistance. By incorporating Ayurvedic principles into modern medical practice, we can enhance patient care and work towards achieving global health objectives. As the healthcare landscape evolves, Ayurveda could play a vital role in promoting better health outcomes and ensuring that treatments remain effective and accessible for all.

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