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Drug Discovery in Ayurveda - different ways of knowing

Ayurveda is one of the ancient systems of the world[1]. There is no denying the benefits of Ayurvedic treatments that several Indians and others across the globe have experienced. The diagnostic and treatment procedures used are unique and are still valid today as are its foundational principles of *panchamahabhutha* (five basic elements of nature), *tridosha* (three humours) and *prakrithi* (individual constitution).

How many of us have stopped to think how the traditional medicines sdeveloped. How did the great saints/ scholars learn of the medicinal properties of the natural raw drugs that are documented in *materia medica*? There were no sophisticated modern scientific instruments or facilities available then, which means that there were alternative ways of drug discovery that developed independently of modern western science.

As per Ayurveda, every material (*dravya*) is a manifestation of five elements (earth, water, fire, air and space) in different proportions. The material could be living as well as non-living things. Depending on the predominant combination of the elements, nature can be categorized into three *doshas*, namely *vata, pitta and kapha*. The *dosha*s in humans determines the *prakrithi*, which remains unchanged life-long. Any vitiation from one's own regular *doshic* nature leads to ill-health. This vitiation can in turn be set back in balance by drugs, diet and other activities that have the opposite qualities. E.g., *kapha dosha* is vitiated in a person suffering from cold, which can be balanced by *kapha hara* (kapha destroying) drug such as *Tulsi* (*Ocimum sanctum*). There can be other *kapha hara* drugs like ginger, turmeric, pepper etc. that can also be used with the same effect. i.e., one is not restricted to a single drug.

So far so good, but then how does one select a particular herb for a specific purpose? It gets tricky at this point! Traditionally, there were trained scholars, called *aptas*, who conducted experiments on self and observed the effect of every material on the physiology. The drugs were classified as per their *rasa* (taste), *guna* (qualities), *virya* (potency), *vipaka* (post-digestive effect) and *karma* (action). There are at least 500 medicinal plant drugs in Ayurvedic *materia medica* for which every single one of the above information is available[2].

The parameters used to test and classify each drug in Ayurveda ranged from tasting (sweet, sour, salty, pungent, bitter and astringent) the drug to experiencing its physiological action on the body. This indicates the forethought that has gone into linking pharmacognosy and pharmacology of drugs as inseparable part of the drug. The scholars even went a step further to predict the action of a drug from its taste and other properties. Sweet substances have a tissue-building (*brhmana*) action, astringent ones have a vaso-constrictive (*srotho akunchana*) action and so on[3]. *Rasa* (taste) thus was an important clue to the Ayurvedic way of dug discovery as well as to quality checking.

Till the 18th Century there were new drugs that were added to the *materia medica* such as *Aloe vera* and pineapple. However today, the exact science or protocol to test these parameters are not readily available nor understood. Due to this, modern parameters and standards are being used to screen/test Ayurvedic medicines, which do not truly reflect its safety or efficacy. These include phytochemical, anatomical or molecular standards. Unlike in Ayurveda, which used human body and perception to study the properties and action of a drug, there is no single instrument in modern S & T that can check at once the pharmacognosy and pharmacology of the drug. Human sensory evaluation is of particular value in the Food & Beverage industry (such as wine and tea) but not in the modern pharma sector. Sensory evaluation is still used by the traditional Ayurvedic drug industries for raw drug identification and preparation of formulations, but protocols are not documented and therefore appear subjective.

It is worthwhile reviving traditional way of drug discovery and quality control using the human body and senses as the instrument. With concerted efforts at identifying and standardizing the Ayurvedic protocols, we could have an indigenous solution to drug discovery and meaningful quality control standards for Ayurvedic and other traditional medicines.

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