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BEYOND DOSE AND DIRECTION: BIPHASIC ACTION OF MEDICINE IN THE LIGHT OF HOMOEOPATHY AND MODERN PHARMACOLOGY

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ABSTRACT

The concept of biphasic action of medicines has been known in homoeopathy for a long time. It emphasizes that an organism reacts in two ways to a medicine based on the dose, the direction, and how sensitive it is. In modern pharmacology, we see a similar pattern in biphasic dose-response relationships. This includes hormesis, unexpected drug reactions, and how receptors behave. While both disciplines- homoeopathy and pharmacology recognize biphasic phenomena, they are often discussed in isolation. Homoeopathy considers it in terms of vital force and similitude, while pharmacology looks at it through receptor science, dose-response curves, and toxicology. However, there is little research that systematically compares these viewpoints, leaving a gap in understanding how traditional and modern ideas can complement one another. This article aims to explore the biphasic action of medicines as understood in homoeopathy and modern pharmacology and to look at how homoeopathic ideas connect with current pharmacological evidence. Thereby providing a broader scientific context for understanding the dual nature of drug action, moving beyond the narrow focus on “dose and direction” towards a more holistic integration of traditional and modern therapeutic sciences.

KEYWORDS: Homoeopathy, Pharmacology, Biphasic action, Hormesis.

INTRODUCTION

The healing sciences, both traditional and modern, have long recognized the complexity of how medicines act on the human body. In homeopathy, Hahnemann's Organon of Medicine outlines the law of similars and the biphasic action of drugs; a medicine may cause a primary action followed by a secondary reaction of the vital force. In modern pharmacology, biphasic action appears in concepts like hormesis, tachyphylaxis, and paradoxical drug responses.

Biphasic action in Homoeopathy

Medicines are capable of altering the state of health of the living organism due to this biphasic action of medicines. Hahnemann observed that every medicinal substance exerts a primary action (direct effect of the drug) and a secondary action (the counter-response of the living organism).

Primary action of medicines

Every agent that acts upon the vitality, every medicine, deranges more or less the vital force, and causes a certain alteration in the health of the individual for a longer or a shorter period. This is termed as primary action. (sec.63).[1]

Primary action refers to the initial effect of medicines on the vital force. It can also be seen as the first phase of biphasic action in medicines. When a medicine is administered to a living organism, it primarily disrupts the vital force, leading to uncomfortable sensations and functions that manifest outwardly as signs and symptoms. Therefore, the primary action of the medicine consists of the immediate changes it induces in the organism.[2]

Examples[1]

Opium: Produces profound sleep (stupor) in its primary action. Alcohol: Initially excites and stimulates mental and physical activity. Digitalis: First slows the heart rate. Coffee: Causes wakefulness, excitement, and mental overactivity.

Secondary action of medicines

To its action our vital force endeavors to oppose its own energy. This resistant action is a property, is indeed an automatic action of our life - preserving power, which goes by the name of secondary action or counteraction."(sec.63).[1]

During the primary action, the vital force is passive and accepts the drug's influence without any resistance. However, after a short time, the vital force reacts to the drug's primary action

in the opposite way. This reaction of the vital force against the drug's primary action is called the secondary action.[3]

"During the primary action of the artificial morbific agents (medicines) on our healthy body, as seen in the following examples, our vital force seems to conduct itself merely in a passive (receptive) manners, and appears, so to say, compelled to permit the impressions of the artificial power acting from without to take place in it and thereby after its state of health; it then, however, appears to rouse itself again, as it were, and to develop (A) the exact opposite condition of health (counteraction, secondary action) to this effect (primary action) produced upon it, if there be such an opposite, and that in as great a degree as was the effect (primary action) of the artificial morbific agent on it, and proportionate to its own energy; - or (B) if there be not in nature a state exactly the opposite of the primary action, it appears to endeavor to indifferentiate itself, that is, to make its superior power available in the extinction of the change wrought in it from without (by the medicine), in the place of which it substitutes its normal state (secondary action, curative action)..." (sec.64).[1]

In Essay on a New Principle for ascertaining the Curative Power of Drugs of 1796, which initiated the field of homeopathy, as well as in his Essay on Coffee of 1803, Hahnemann describes numerous examples of primary and secondary actions of many drugs. However, he does not clearly state the origins of these actions. It is likely that the so-called secondary action is what modern science may term the body's homeostatic powers. This process re-establishes order by initiating a series of opposite effects to those caused by the drug. This perspective would also clarify the curative action, which Hahnemann accurately refers to as the awakening of the organism's reactive power stimulated by the potentized drug. We might view the secondary effects as a combination of later, subtle effects of the drug and the body's reactions to the primary action. The primary effects disturb the system's natural balance, prompting the body to respond with opposite secondary symptoms.[4]

Examples[1]

Opium: After primary sleepiness → produces sleeplessness and restlessness. Alcohol: After initial stimulation → causes depression, languor, and sedation. Digitalis: After slowing the pulse → can cause reflex acceleration of the heart. Coffee: After initial wakefulness → leads to drowsiness and exhaustion.

If we look into the clinical significance of this, the primary action shows us what a drug can do (basis of drug proving) and the secondary action is the healing power of the organism stimulated by the remedy, which makes Law of Similars works here.

If a drug produces symptoms in its primary action that are similar to the disease, the secondary action of the organism will be directed against those symptoms, leading to cure.[1]

Example
If a patient has insomnia → giving Coffea (which causes insomnia in primary action) will stimulate the organism to produce the opposite reaction, restoring sleep.

Biphasic concepts in modern pharmacology

If we relate this concept to the understandings of modern pharmacology, we find concepts of Hormesis and biphasic drug response, paradoxical drug reactions and homoeostasis. Also concepts of Arndt-Schulz Law, Koetschau effect describes the same dose-dependent dual response phenomenon, which includes hormesis in modern pharmacology and Primary & Secondary action / Minimum dose principle in Homoeopathy.

The earliest insights into this concept can be traced to Paracelsus (1493–1541), who famously stated that "all things are poison and nothing is without poison; only the dose makes a thing not a poison." This principle set the stage for understanding that medicines may be beneficial in small amounts but harmful in larger doses, reflecting an early recognition of hormesis and biphasic responses.[5] Later in the 19th century, Claude Bernard emphasized the adaptive and compensatory nature of physiological systems, laying the groundwork for modern receptor pharmacology and the understanding of homeostatic counter-reactions.[6,7]

In modern pharmacology, biphasic responses are understood through various frameworks. The concept of hormesis describes dose-response relationships where low doses have beneficial effects, and higher doses can be inhibitory or toxic.[8,9] Paradoxical drug reactions occur when medications produce opposite effects from what is expected, such as agitation resulting from benzodiazepines, further illustrating the dual nature of drug responses.[10,11]

At the molecular level, biphasic effects result from receptor dynamics (sensitization or desensitization), negative feedback loops, and compensatory homeostatic mechanisms.[12,13]

Clinical examples include the biphasic cardiac effects of digitalis (bradycardia followed by tachycardia), the excitatory-depressant sequence of alcohol, and the analgesic effects followed by hyperalgesia from opioids.

What actually Hormesis is?[9]

Hormesis is a biological concept that describes a biphasic (two-phase) dose–response relationship. It means that a substance or stimulus that is harmful or inhibitory at high doses may actually be beneficial or stimulatory at low doses.

Examples of Hormesis

Pharmacology: Many drugs stimulate at low doses but depress at high doses (e.g., alcohol, nicotine, digitalis).

Toxicology: Small amounts of certain poisons (like arsenic, cyanide, or heavy metals) may stimulate metabolism or immune response, but in larger amounts, they are lethal.

Exercise: Mild physical stress (exercise) enhances strength and immunity, but overtraining damages muscles and immunity.

Radiation biology: Low doses may promote DNA repair, while high doses cause mutations and cancer.

Integrated Chart: Dose–Response & Dual Action Concepts

Concept	Key principle	Dose/Response pattern	Example	Link with homoeopathy
Hormesis	Low dose stimulates, high dose inhibits/toxic	Biphasic (J-shaped / inverted U curve)	Low-dose radiation → DNA repair; high-dose → mutations	Shows body's adaptive (compensatory) response, similar to secondary action
Arndt–Schulz Law	Weak stimuli stimulate, strong stimuli inhibit, very strong	Dose-dependent biphasic law	Alcohol: low dose → stimulation; high dose → depression	Explains why minimal doses in homeopathy act Curatively
Koettschau Effect	Same substance shows opposite effects at different concentrations (esp. enzymes/cells)	Low conc. → activation; high conc. → inhibition	Adrenaline: low dose → strengthens heart; high dose → arrhythmia	Provides a physiological basis for biphasic action
Biphasic action in homoeopathy	Primary action: Direct medicinal effect on vital force Secondary action: Body's vital reaction	Dual action (Primary vs Secondary)	Opium: primary → sleep; secondary → sleeplessness	Healing depends on secondary (homeostatic) response of vital force

All these concepts point to the same universal principle effect of a substance depends on the dose, susceptibility, and the body's adaptive power.

Modern science calls it Hormesis Pharmacology framed it as Arndt–Schulz Law and Koettschau Effect; Homoeopathy describes it as Primary and Secondary action of medicines.

CONCLUSION

Even in this dual recognition of biphasic activity, however, homoeopathy and pharmacology interpret the phenomenon differently. Homoeopathy sees it as the result of the vital force and the law of similitude, whereas pharmacology sees it as receptor interactions, pharmacokinetics, and dose–response relationships. Both, however, agree ultimately on the central fact that drug action is not unidirectional but intrinsically adaptive and frequently dual-phased.

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