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Role of inductive and deductive logic in the discovery of different action of a homoeopathic drug or a new drug in homoeopathy

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Abstract

The progress of new drug discovery or discovery of various aspects of a drug in medical science started after the inductive logic formulated by Sir Francis Bacon from England.

Homoeopathy, the emerge of a new methodological branch in health science also developed with the help of inductive logic for which Dr. Samuel Hahnemann the father of Homoeopathy named his Doctrine of Homoeopathy as '*The Organon of Healing Art*' following '*Novum Organum*' of Sir Francis Bacon in the year 1810. Later on, the subsequent editions Doctrines of Homoeopathy book named as '*Organon of Medicine*'.

In this article, I have tried to establish how Homoeopathy developed by inductive logic and Homoeopathic drugs action can be read and established by inductive logic and new drug discovery and discovery of various aspect of a known drug would be possible by both inductive and deductive logic as per situation.

The recognition of hypoglycemic property of Aegle folia mother tincture and Asafoetida as a drug of avascular necrosis could be possible by method of inductive logic and deductive logic respectively.

I have also suggested how black peeper can be used for bioavailability of not only curcumin but for other phytochemicals bioavailability by using in salads and soup through deductive logic. This can be generalized through a paper in phytochemical study.

Hope my endeavor would be successful if this article would be beneficial as art of new Homoeopathic drug discovery or discovery of various unknown aspect of a known drug and correlating patho-physiological property of a drug to disease in treatment. Thank you.

Keywords: Organon of healing art, inductive logic, deductive logic, art of new drug discovery in homoeopathy, logics in homoeopathy

Introduction

It is the contribution of Aristotle (384 bce to 322 bce) ^[1] who made deductive logic for reasoning out a particular truth from Universal truth which pursuit that "Man is mortal, Sudha is a man, so Sudha is also mortal". Deductive logic gain access to research methodology, and stood a long time with solid base. Later on, to discover the new drug, a new model was given by a British Philosopher Lord Francis Bacon (1561 AD to 1626 AD) ^[2, 3] which is known as *inductive logic*. The new logic established by the inductive reasoning from many particular facts towards generalization. For example, if observation found that Sudha died, Saroj died and Sadhana died, then their universal genre is human. So, we have to conclude that all human are mortal. Inductive logic gave a new standing on development of new discoveries which influenced many intellectuals for discoveries and inventions so also to Dr. Samuel Hahnemann, ^[4] the father of Homoeopathy who had been searching a new system of medicine for rapid, gentle, and permanent cure ^[5].

Hahnemann's discovery of Homoeopathy by virtue of the Inductive logic

Dr. Samuel Hahnemann who was the physician in Orthodox medicine in 18th century, being frustrated of the then treatment had almost stopped practicing Orthodox medicine. Hahnemann's intellectual mind did not approve the then treatment e.g., letting out of blood by venesection for hypertension, charring of head by iron rods in insanity etc. As he had mastery on 12 languages, so he started his living-hood by translating medical books.

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While he was translating the famous Orthodox medicine authority English physician William Cullen's *Materia Medica* "A Treatise on *Materia Medica*" he found 'decoction of cinchona bark cures malaria'. That time the curative power of decoction of Peruvian bark was assumed to its property of bitterness and astringent^[6]. Hahnemann's intellectual mind wanted to know the mechanism of cure of malaria. That time bitter alkaloid Quinine from Cinchona bark was not discovered. To know the *modus operandi* of cure of malaria by decoction from *Cinchona officinalis* bark, Hahnemann drank 4 drachms of decoction of *Cinchona officinalis* bark, twice a day to know its effect on body^[7]. Astonishingly he developed malaria like fever symptoms. He correlated this to the similar nature of events as DeZoteux^[8] and Leroy^[9] found that Small pox causes severe ophthalmia and when already chronic ophthalmia if exists in some cases, if they suffered small pox, the chronic ophthalmia get cured. Similarly, Hahnemann correlated how small pox causes deafness and dyspnoea and both the diseases cured if small pox suffering occur to those patients which was observed by J. Fr. Closs^[10]. So Hahnemann correlating those findings concluded that decoction of *Cinchona officinalis* cures the malaria as it is capable of causing malaria like symptom in healthy human beings. This similar approach of treatment was known to world as "*Simillia similibus curenter*"^[11]. Thus the discovery of Homoeopathy was based on Inductive logic 'decoction of cinchona bark causes malaria like symptoms in healthy human beings, so a person suffering from malaria if takes decoction of cinchona officinalis bark will be cured as per similar finding that small pox causes ophthalmia and deafness and person already suffered ophthalmia and deafness will be cured by small pox infection'.

Characteristics of Inductive logic

Inductive logic is a scientific method that proceeds by induction of a particular fact to another assumed truth through scientific construction by the process of (1) method of agreement, or (2) method of difference, or (3) method of concomitant variations, or (4) method of residues or residual variations^[12]. Then we can reach to generalization by statistical method of significance test^[13]. For example, if $x = y$ and $y = z$, then $x = z$. This induction is based on analogies that y is common and similar to x and z . So, $x = z$. Homoeopathy is based on this principle. Homoeopathic medicine *Cinchona officinalis* (x) in healthy individuals causes the malarial symptoms (y). if patient suffering from malaria with symptoms of *Cinchona officinalis* proving (y) if will be given Homoeopathic medicine *Cinchona officinalis* (x) the malaria will be annihilated as small pox annihilates chronic ophthalmia, and deafness. This inductive logic generate research hypothesis which is the Baconian First Vintage^[14]. So, on repeated events of same method for curing malaria or other diseases refines the hypothesis which is known by Baconian method of 'gradual ascent' by various instances towards generalization which formulates law of homoeopathy: *Simillia similibus curenter*.

Some of my perception of Homoeopathic Drug action through the sense of inductive logic

1. If in an equation $x = x + z$, x being the active pharmaceutical ingredient (API), then $z = 0$, by method of difference of inductive logic,^[15] that means 'z' has no Active Pharmaceutical Ingredients (API), but may

contain vitamins, or antioxidant, or some protective alkaloids or glycoside or acids. Then $x + z$ is better one being enriched with antioxidant or vitamin or any protective item. So, in holistic therapy, we use mother tincture for purpose of acute and severe manifestation without any side-effect but in Orthodox medicine, where API 'x' derived from $(x + z)$, have a notion that the specific active pharmaceutical ingredient has better action. Yes, the specific active pharmaceutical ingredient has better action but simultaneously worst side effects. In mother tincture, the $(x + z)$ together, by the other associates (z) acts as neutralizer of side effects. That might be antioxidants or other neutralizing substance in the form of vitamin or alkaloid or glycoside or acids, the side effect of main API is nullified. For example, reserpine^[16] is a medicine derived from *Rauwolfia serpentina* which was antihypertensive medicine in orthodox medicine. Now it is banned in Orthodox medicine due to its side effects. Our *Rauwolfia serpentina* mother tincture contain 50 indole alkaloids which neutralizes reserpine's side effect. So, 'z' ingredients have property of neutralizing pharmaceutical side effects.

2. If in an equation, $x + y$ is not equal but similar to $x + z$, x is the API found in both $x + y$ and $x + z$, then in spite of different API, 'y' and 'z', by virtue of method of residue of inductive logic^[15], both equations are the medicine for a similar diagnostic problem such as for example for calcium deficiency syndromes, anemia and hypoproteinemia, and then 'y' and 'z' API are differentiating factors. For example, in Homoeopathy, the group medicines are having similar action such as in Calcium group, and similar action for Phosphate group, and similar action for Natrum group, and similar action for Kali group etc. Then the differential action would be judged by the other different API along with common group medicine. This is because *Calcarea carbonica* and *Calcarea phosphorica* has both calcium and iron and protein deficiency indication but *Calcarea carbonica* is indicated for Kwashiorkor children and *Calcarea phosphorica* is indicated for marasmus children. Here y and z are the differentiating factor for common problem calcium deficiency or iron deficiency or protein deficiency or all three deficiencies together.
3. If in two plants API A & B is similar to A & B, in the context of same API, then the difference in action would be in the disproportional amount of same ingredients which is to be analyzed by method of concomitant variation of inductive logic^[15] to know its effect. For example, *Nux vomica* contains two alkaloids Strychnine and Brucine^[17]. In *Nux vomica* Strychnine amount is more which is a parasympathetic stimulator^[18] for which it is indicated in dyspepsia, constipation and also in migraine where as in *Ignatia* same two alkaloids also present in reverse proportion of amount to *Nux vomica*. In *Ignatia*, Brucine is more found, which is Central Nervous System (CNS) stimulator^[19, 20] for which it is more indicated in Neurosis and Psychosis. Then differentiation would be if a case is having intensified neurosis problem and migraine, *Ignatia* is indicated and if in a person, more of dyspepsia or constipation and less of neurosis, then *Nux vomica* is indicated. If in a psycho-social cause, in a case more somatization occurs and less neurosis, then

Nux vomica is indicated and, in a case, by mental tension if more neurosis and psychosis occur with less somatization, then Ignatia should be indicated.

Application of Inductive logic in Homoeopathic Drug discovery

I had discovered the new action of an existing rare drug by inductive logic. The rare drug is Aegle folia mother tincture. It was first proved by Dr. PP Biswas [21]. The hypoglycaemic effect of Aegle folia mother tincture was discovered and it was published in 2021 May issue of Homoeopathic Heritage as a peer reviewed article [22] which is as follows.

The anorexia symptom was found in proving of Dr. PP Biswas. The hypoglycaemic effect of Aegle folia mother tincture was assessed by inductive logic as follows:

1. In Hindu culture of our Odisha state, leaves of *Aegle marmelos* given to patients after jaundice due to viral hepatitis to increase appetite. Aegle folia mother tincture also causes anorexia in proving of Dr. PP Biswas.
2. Increase appetite or hunger sensation is caused due to hypoglycemia.
3. So, induction is leaves of *Aegle marmelos* / Aegle folia mother tincture causes hypoglycemia to relieve anorexia.

After hypothesis, the Aim & Objectives were designed which was as follows:

Aim: To determine the hypoglycemic effect of Aegle folia mother tincture.

Objective: To determine the hypoglycemic effect of Aegle folia mother tincture by oral Glucose Tolerance Test (oral GTT) [23].

Methodology: It is a single blind, quasi experimental study for paired t-test.

Sampling method: Purposive sampling.

Sampling size: 10

Inclusive criteria: Apparently healthy provers taken from both the sex and age limit from 20 to 40 years age.

Exclusive criteria: Provers were devoid of any disease or mental tensions.

09 human provers (volunteers) those were my students in Cuttack Homoeopathic Medical College and Hospital and me in the year 1999 consists of total 10 provers contributed for clinical proving through oral GTT test. When, I met my friend statistician Mr. KD Sahoo, he then suggested a trial test before the study. He told me we will have the paired t-test as both control group and experimental group are same and Fasting Blood Sugar test should be done before placebo control test and before intervention. If in the test, the difference between both the Control group and Experimental group Fasting Blood Sugar (FBS) will not be statistically significance, then we will march further for intervention otherwise this group will be rejected because they are showing significance difference before test. Then I agreed to his noble idea and we have added FBS test also to same 10 volunteers for both control group and experimental group.

In our Control group and experimental group FBS were done and found statistically not significant at 5% level. Then we started the oral GTT test. First oral GTT test was done with placebo i.e. with 50% plain ethyl alcohol 10 drops with water and then after 10 minutes with 75 grams of oral glucose solution in 250 ml. of water.

Then after 7 days, we did oral GTT test similarly with 10 drops of Aegle folia mother tincture with water and then after 10 minutes with 75 grams of oral glucose solution in 250 ml of water and ½ an hour, 1 hour, 1 and ½ an hour and then in 2 hours reading of blood sugar recorded.

Results

The result of FBG of Control group and Experimental group and ½ an hour GTT, 1 hour GTT and 1 and ½ an hour GTT and 2 hour GTT were compared which is as follows.

Table 1: Show Result of FBG, 1 hour and 1 & 1/2 hour GTT test

Name, Age, Sex, Weight, Height	FBG (Control group)	FBG (Experimental group)	1 hr. GTT (Control group)	1 hour GTT (Experimental group)	1&1/2 hour GTT (Control group)	1&1/2 hour GTT (Experimental Group)
Miss S. S. R., 22 years, 41 KG, 4 ft. 11 inches	78	83	121	131	114	118
Miss B. S., 21 years, 61KG, 5ft. 2 inches.	108	107	164	114	167	100
Miss R.S. 22 years, 58KG, 5 fts.	83	86	131	107	118	92
Miss L. 23 years, 51KG, 4ft. 11 inches	78	81	128	118	114	100
Miss P.D. 22 years, 51KG, 5 ft. 1 inch.	71	81	114	125	107	100
Miss M.H. 22 years, 58KG, 5 ft.	71	87	135	112	121	100
Mr. U.N. 25 years, 46KG, 5 ft. 2 inches.	83	78	108	100	133	116
Dr. KPK, 27 years, 62KG, 5 ft. 4 inches.	82	84	135	112	121	100
Dr. S.K.M. 28 years, 42KG, 5 ft. 3 inches.	72	78	107	100	126	107
Dr.S.S.M. 39 years, 74 KG, 5 ft. 8 inches.	86	84	142	115	114	107
Result	Difference is not statistical significant at 5% level by paired t-test.		Difference is highly statistical significant at 1% level by paired t-test.		Difference is highly statistical significant at 1% level by paired t-test.	

Discussion

1. Our experiment found highly significant at 1 hour and 1

&1/2 an hour GTT at 1% Level which means that p-value is less than 0.01.

- Maximum up to 27 mgs of blood sugar was reduced where as a lady who was prediabetes had reduction of blood sugar to 57 mgs. This signifies that *Aegle folia Q* will act better on DM patients.
- An accidental discovery happened e.g., a lady who had a ganglion in her hand that disappeared.
- Out of 10 cases 2 cases were refractile in 1 hour GTT & 1 case is refractile in 1&1/2 hour GTT.

Conclusion

This experimental pilot study suggests that we can go for clinical study because in experimental study all variables are in control e.g., no mental tension and till 2 hours no other foods are allowed. A clinical study on *Aegle folia* mother tincture on curing ganglions can also be undertaken.

Application of deductive logic in Homoeopathic medicine's action discovery

Introduction

It is the deduction of arriving a particular truth from an already existence of Universal truth. Deductive logic is simple for decision making by inference where a solid background of truth in the form of Universal truth already existing. The application of deductive logic is concrete discovery of Aristotle [24].

Table 2: Show Pathological condition, Pathological changes before treatment on 25/07/2004 and Pathological changes after treatment on 06/09/2005

Pathological condition	Pathological changes before treatment on 25/07/2004	Pathological changes after treatment on 06/09/2005
Avascular necrosis of head of femur of both hip joints	Grade II avascular necrosis of right femoral head. Grade I avascular necrosis of left femoral head.	No impression is written.
	There is some irregularity of the articular margin. Minimal synovial effusion is seen involving right hip joint	Minimal marginal irregularity is seen on articular margin. No synovial effusion is seen.

The patient is able to walk without any assistance, can sit in squatting position, can ride up ladder and can run and now working in Dubai. After success of this case, many avascular necrosis case came to me and successfully treated and managed by *asafetida*.

Discussion

Inductive logic is the method new invention or discovery from particular truth to Universal truth by the process of generalisation; the deductive logic is the method of figure out a particular truth from universal truth. The above two medicines are discovered from inductive and deductive logic respectively. These are the deductive logic phenomena and by this phenomena lot of phytochemicals action can be discovered further. For example, The Curcumin found best for heart, then its action of joints. Then it can be tried on corona virus infection, causing precipitations of coagulation and also can be tested to prevent heart attack in post COVID crisis of heart attack. In my case I found that Turmeric powder in warm water 4 times a day reduce the D-Dimer than normally expected (in a week, D-Dimer reduced from 0.50mgs/L to 0.10mgs/L and CRP reduced from 4.5mgs/L to 1.5mgs/L). Now every day at least twice daily Turmeric powder in warm water I am taking to prevent any coagulation due to corona virus effects or Corona vaccine effects or to protect heart from any coagulation episode. Similarly synergistic action of phytochemicals is very important. It is already established that black peeper with

Application

If man is mortal, anybody comes under spectrum of human being are also mortal. Similarly, when we use deductive logic in Homoeopathy I found:

- Degenerative changes found in drug picture of *asafetida* [25].
- Avascular necrosis and osteoarthritis are degenerative bone disease.
- So *asafetida* is the medicine of avascular necrosis and osteoarthritis.

In this deductive logic, I had relieved the pain of avascular necrosis and osteoarthritis and stopped the progress further. They had their normal life after treatment without any assistance.

I had successfully managed many cases of avascular necrosis and osteoarthritis with *asafoetida*. One of the model case with anxiety as causation of avascular necrosis has been cured and published in the International Journal of Homoeopathic Sciences in the year 2021 with title "The applied aspect of socio-psychic causation & trait effect in the context of Swedenborg-Kentian concept of disease development with clinical perspective" [26]. The pathological change of before treatment and after treatment are.

turmeric powder increases bioavailability of Curcumins. [28] So by deductive logic the same black peeper can be used in our salads, vegetables along with salts to increase bioavailability of antioxidants and other phytochemicals in salads and vegetables.

Conclusion

Inductive logic and Deductive logic can be used as per situation for new discovery of phytochemicals action and function so also in Homoeopathic medicines. This is because our Master Dr. Samuel Hahnemann named his new discovery Homoeopathic Literature 'Organon of medicine' following the Lord Bacon's Inductive logic book "Novum Organum". Now it is our responsibility to follow inductive and deductive logic for our drugs' various new action discovery, and new drug discovery in Homoeopathy.

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Conflict of Interest

Not available

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