

# REVERSE MUTATION AND CARCINOGENESIS

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## ABSTRACT

In spite of sufficient interest and enormous financial support, cancer problem remains an immediate and urgent concern. Cause of cancer is not clearly known and a broad-spectrum medicine for its cure is yet to be discovered. Meanwhile, attempts to reduce chances of death by cancer, needs prompt and careful consideration.

In the present article, the author, while furnishing some scientific ground for the homoeopathic system of therapeutics, extends the same towards the treatment of cancer. The author believes that the cancer producing agents, particularly the chemical carcinogens, if used homoeopathically, may prove to be powerful weapons in our fight against cancer malady.

## INTRODUCTION

In the year 1790 Hahnemann while translating Dr. Cullen's *Materia Medica* in German, found that, peruvian bark extract, a medicine for intermittent fever, causes paroxysm of chill and fever, if taken by healthy persons. To experiment the fact, Hahnemann started taking four drachms of the extract, twice a day and to his utter surprise was soon affected with paroxysms of chill and fever.<sup>1</sup> After repeatedly experimenting with the same substance and with many others, Hahnemann ultimately inferred that cinchona cures paroxysm of chill and fever, not because it is astringent or bitter drug but because it is capable of producing paroxysms of chill and fever on healthy persons.

Hahnemann, thus, conceived the symptom-similarity of drugs and tissues as essential for medical treatment of medically curable diseases and the theory of, let likes be cured by likes (*similia similibus curentur*) was evolved. The necessity for the methodical discovery of medicines, experimenting on healthy persons, was also therefore made apparent.

In proving homoeopathic medicines, subjects of experiments chosen are persons free from diseases and are delicate, irritable and sensitive<sup>1</sup>. These persons have to ingest perfectly genuine, simple and unadulterated forms of medicine and during the time of experiment, the diet is strictly regulated and anything that may have a medicinal value is carefully avoided.

The exact plan of experiment<sup>1</sup> adopted is to give to the experimenter on an empty stomach, daily, from four to six very small globules of medicines of thirtieth potency (30 c), dissolved in more or less water thoroughly mixed and let the experimenter continue this for several days. To shorten the prodromal period<sup>2</sup>, it may be given every two hours, for 24 to 48 hours, unless symptoms appear sooner.

As soon as the symptoms begin to show, it is time to cease taking the

medicine and the pure effects of the simple medicine in altering the human health and of artificial diseases and symptoms, they are capable of developing in the healthy individual is recorded. A medicine is assured to be thoroughly proved, when subsequent experimenters can notice little of a novel character from its action and almost always only the same symptoms, as has been already observed by others.

Since its inception, the curative power of homoeopathic medicines was however under continuous challenge. All attempts, made to establish it in corroboration with modern, scientific concepts remained either inadequate or totally unacceptable. Difficult, though, to correlate with its increasing popularity, in fields of child and chronic diseases, large number of cures, some verging even to miraculous, received no appreciation from the scientific world and the cures claimed were simply attributed to either psychological or natural phenomena.

#### ANALOGIES BETWEEN HOMOEOPATHY AND IMMUNOTHERAPY

Many of the recent research developments in the fields of immunotherapy, vaccinotherapy, allergy etc. are remarkably analogous to the homoeopathic system of treatment. For better comparison a few of them are quoted below.

The observation made by Hahnemann, that, "Every artificial morbid agent acts upon the vitality to cause certain alteration in the health of the individual, to which, the vital force rouse itself to develop the exact opposite condition of health"<sup>1</sup> is strikingly analogous to the following findings made by the medical science, in recent times:

"There is a long list of offending substances known as allergen, capable of producing an altered reaction in an animal, to which, the body immediately reacts to protect itself."<sup>2</sup> The chemical substances that trigger the reaction in the body are known as antigens and the chemical substances produced by the body to combat and neutralize such antigens are known as antibodies.

The remarkable feature of immunotherapy being its specificity<sup>3</sup>, in each case of disease, there is the specific homoeopathic remedy, which is found to contain in the symptoms, the greatest similarity to the totality of symptoms of a given natural disease.<sup>1</sup> The uncommonly minute dose of homoeopathic medicine is also comparable to the amount of antigen needed to sensitize an animal, which is remarkably small, the limit being the order of one ten thousandth of a milligram<sup>7</sup>.

The presence of antibodies, make a person sensitized and on subsequent exposure to the antigen, the antibody is known to interact with antigen and in the process several pharmacologically active substances are released, which produce the adverse reaction, called, allergy.<sup>6</sup> This would remind one of the homoeopathic aggravation, usually caused, when the accurately chosen homoeopathic medicine is repeated frequently and the dose has not been sufficiently small.

The degree of immunity resulting from the administration of a vaccin,

is known to be variable depending on the potency of antigen preparation, the doses given, the intervals between the doses (injections), and the degree of ability (sensitivity) of the persons to produce antibodies when properly stimulated.<sup>5</sup> For the identification of an allergen again, the detailed history of the condition, its evolution, exact location in the body, what aggravates it, when it improves, the effect of the season etc. are necessarily obtained through questioning the patient.<sup>6</sup> These are all, in turn, remarkably analogous to the homoeopathic system of treatment.

Desensitization, a method to combat allergies, by exposing the allergic patient to small quantities of the antigen in increasing doses<sup>6</sup>, is also comparable to the use of accurately chosen homoeopathic medicine in properly small and gradually higher doses, to avoid slight homoeopathic aggravation during the first hours<sup>1</sup>.

In the homoeopathic system of treatment also, the protection against the toxin produced by a bacterium is more important than against the organism itself, since the symptoms of the disease may be due primarily to the toxin and not to the presence of the bacteria in the body<sup>7</sup>. The size of the bacteria is not apparently injurious and they do not multiply to such an extent that they interfere with the activities of the body by sheer bulk<sup>7</sup>.

From the above analogies and many others, therefore, and at the same time taking into consideration the following hypotheses, that the substances other than protein may form loose complexes with the proteins of the body and the complexes may serve as antigens and stimulate the production of 'reagin', the hypothetical antibody<sup>7</sup>, and also that the globulins may occur in the serums of immunized animal that combines specifically with antigen without producing visible reaction<sup>7</sup>, it may be inferred that, Homoeopathy is not unscientific, neither comparable to witchdoctoring etc. but is possibly, a form of immunotherapy.

#### REVERSE MUTATION, A CONCEPT TO EXPLAIN THE THERAPEUTIC POWER OF HOMOEOPATHIC MEDICINE

Due to extraordinary minuteness of the dose, the homoeopathic medicine is said to be transient and disappear rapidly of its own<sup>1</sup>. The original antigen introduced in the body is also known to be eliminated quickly during the process of renewal of the whole structure of an animal, while the stamp set by a course of immunization remains, and the synthesis of antibody or at least a heightened capacity to form antibody persists, without fresh introduction of antigen<sup>7</sup>. This is not difficult to understand, as in recent times it has been observed that, human plasma cells make considerable amount of RNA and possibly the cell reads the same RNA blue prints over and over in its manufacture of the antibody<sup>9</sup>.

It is also known that the immune response to various antigens is under controlling influence of genes, termed immune response (Ir) genes. These genes are probably present in all vertebrates including man, where they may

influence the outcome of various diseases<sup>10</sup>. More than 1,600 human diseases caused by defects in the content or the expression of the genetic information in DNA have been identified<sup>11</sup>.

Genes are discrete units, made up of an extremely complex chemical substance, "deoxyribonucleic acid (DNA), bound to a protein and arranged linearly in thread like structures, known as chromosomes of which every organism has a characteristic set and ribonucleic acid" (RNA) is a polymer that is chemically very similar to DNA.

Genes are duplicated with extraordinary exactness for enormous number of cell cycles. Although generally quite stable, a gene subjected to unusual stress, may undergo a sudden permanent change, known as mutation. A great many chemical substances are known to produce gene mutation. Reverse mutations from a mutant to wild type alleles also may occur<sup>12</sup>.

It is also known that genetic information in all living cells is encoded in molecules of deoxyribonucleic acid (DNA). Earlier, it was believed that information is sequentially transferred from DNA to RNA to protein. With the discovery of a viral enzyme called reverse transcriptase, the reverse flow of genetic information from protein to nucleic acid, has however been indicated<sup>13</sup>.

Discovery of prostaglandins (20-carbon carboxylic acid, incorporating the COOH group) in body fluids and tissues, its specific effects and its production and release evoked by stimulation of nerves, indicate the meeting ground of the two main systems of communication in the body, hormones and the nerves meeting directly in the membrane of the cell<sup>14</sup>. Varieties of environmental signals are again believed to be received and transduced by cell surface receptors. The binding of such a signalling legend or 'first messenger' induce a change in the receptor, initiating the next event (s) by which information is carried across the membranes into the cell interior. The cyclic nucleotides, cyclic AMP and cyclic GMP, which are regulated by specific membrane bound enzymes (cyclases), have received much attention as a 'second messenger' in the signalling cellular activity<sup>15</sup>.

In this perspective, that many of the metabolic disorders are due to defects at the genetic level, it would be the most reasonable method of treatment to rectify the genetic defects, rather than to substitute the defective gene with a new and healthy one, a contemplated process called genetherapy.

The disease symptoms therefore, the probable endresult of several consecutive mutations, may possibly be cured by the way of reverse mutation, as might be stimulated and specifically regulated by (Fig. 1) potentized homoeopathic medicines, working through a series of communicating systems already existing in the body.

Following experimental observations may be put forward as evidence in support of such a theory:

(a) Diseases of long lasting and specially such as are of complicated character, require for their cure a proportionately long time, while recently

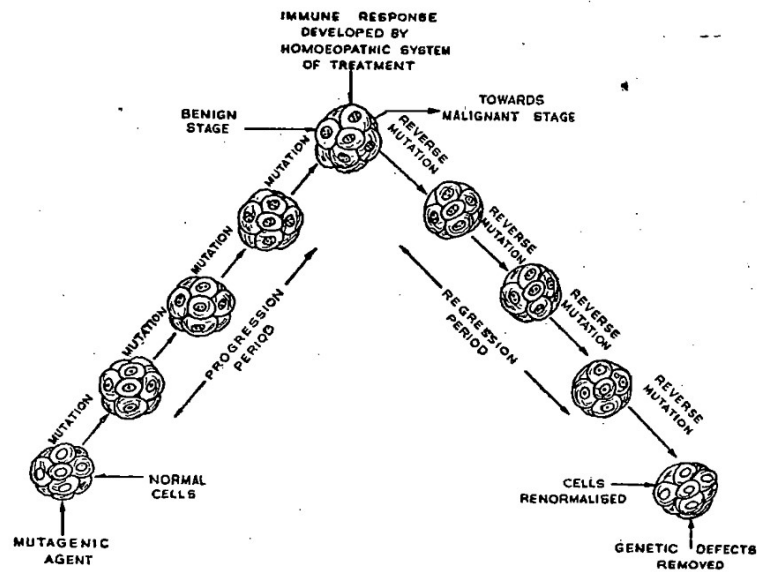


FIGURE 1

Consecutive steps of gene mutation, caused by some mutagenic agent and the probable end result thereof, have been shown (the black dots in the cell nuclei) in the progression period. The postulated reverse mutational steps, have also been shown, in the regression period, a probable effect of immune response developed by the specific homoeopathic remedy.

developed acute disease, disappear imperceptibly in a few hours, under the action of specific homoeopathic remedy<sup>1</sup>.

(b) "In chronic cases, diseases get well in the reverse order of their coming, that the latest symptoms will be the first to go away, and that the older symptoms will come and go in reverse order in which they appeared". Where the old symptoms do not come back the disease process is only said to be restrained and not cured<sup>2</sup>.

#### THE CANCER MALADY

Cancer is an autonomous new growth of tissues of an unknown basic cause. In the case of cancer, one or more cells suddenly begin to grow by division at a rate which may approximate or equal to that which normally occur before birth. Such centres of growth known as tumours, may show different degrees of disorganisation and lack of control. Some, such as warts, wens and moles, ordinarily cease growth without intervention or treatment are called benign. Other classified as malignant continue with unabated vigour and invade surrounding tissues by direct or contiguous growth or it may infiltrate within blood and lymph vessels in which the cells are broken off and carried to distant organs in which they lodge through filtrate, a process known as metastasis<sup>16</sup>.

Although as yet there is no unambiguous evidence that any class of human cancer is regularly caused by a virus, the possibility that C-type RNA tumour viruses are involved in human neoplastic disease has been subject of much speculation and experimentation in recent times. In particular human leukaemia has come under close scrutiny because so many leukaemias from diverse species of animals have a viral aetiology<sup>17</sup>.

One of the most reasonable theories of the origin of cancer postulates that several genes in each cell independently restrain it from forming a cancer, so that until each of those genes has been inactivated by mutation, it will not form one. Mutation can be induced either by environmental mutagens or arise as a spontaneous error during replication of DNA at any time in the life of a cell. Most forms of human cancer seem from their age incidence to be the end-result of several mutational steps that may have taken place at any time in the patient's life. The total incubation period of any cancer, therefore, dates back to the moment when the first step took place, presumably some 10 to 20 years back<sup>18</sup>. There are however 100 or so distinct varieties of cancer.

The dichotomy between viral and genetic theories of the origin of cancer, has however been removed recently, with the discovery concerning the interaction between tumour virus and the genetic material of the cell. It is now believed that elements related to viral RNA are attached to the genome of the cell and transmitted genetically to become activated at some future time and cause spontaneous cancer<sup>19</sup>.

#### THE CARCINOGENS

There are more than 400 chemical substances called carcinogen which when introduced on the animal by painting the skin or into the animal by subcutaneous or intraperitoneal injection, are often followed by a reaction on the part of the animal which results in cancer formation.<sup>16</sup>

The technique for the production of skin cancer consisted in applying the substance in benzene solution (0.3 g. in 100 ml) to the interscapular region of mice twice weekly. Tests for the production of sarcoma were made by injecting the compound in fatty medium such as lard<sup>20</sup>.

Results of animal experiments show that 3:4—benz pyrene is the main carcinogenic constituent of coal tar, 3:4—benzphenanthrene is the simplest hydrocarbon having carcinogenic activity, and the most powerful carcinogenic agent yet discovered is methylcholanthrene<sup>20</sup>.

By mid-20th century, many inorganic and organic compounds had been recognised as capable of causing cancer in humans by occupational hazard, some of which have been shown in Table 1. The quantity of this agent may be so minute as not to cause apparent irritation during the time of exposure. The change is gradually induced in the tissue which ultimately become cancerous. The precancerous change may be so permanent that malignant

tumour may develop many years after the particular occupation has been abandoned<sup>16</sup>.

TABLE 1

Occupational carcinogens	Types of cancer developed
Benzol	Leukaemia
Aniline, benzidine, and betanaphthalene	Papiloma
Chrome salts, nickel-carbonyl and asbestos dust	Cancer of the respiratory tract
Pitch, coal tar, crude paraffins, crude mineral oils and arsenic compounds	Multiple cancers involving the skin, chiefly of the hands, arms and scrotum.
2-naphthylamine	Bladder cancer
Benzpyrene	Lung cancer
Radio active metal paints	Bone sarcoma

It is interesting to note that the most powerful experimental carcinogens are known to be intense mutagens<sup>21</sup>.

Therefore, the carcinogens may be of much more importance than we realize, particularly if they are homoeopathically potentized and used against the theory of *similia similibus curentur*.

#### CONCLUSION

For the vast majority of cancers there is no specific drug as yet and the results obtained so far from treatments by surgery, radiation and cytotoxic drugs are not very good. Fewer than half of all cancer patients survive five years from the time cancer is first diagnosed.

Appearance of cancer in old age shows simply that immune system is failing<sup>18</sup>. The association of malignancy with impaired immunity<sup>22</sup> also suggests that improving the immune response may be beneficial in some types of cancer. Also, it is against virus diseases that the production of immunity by vaccination has been most successful. Since virus attack specific tissues in the body and multiply within cells, they cannot be reacted by antibiotics, which are administered via blood serum.

Alkylating agents like nitrogen mustard, cyclophosphamide, etc. known as anticancer drugs, have proved to be effective inhibitor of tumour growth, but these so called radio mimetic agents have frequently and paradoxically been shown to be carcinogenic.<sup>13,23</sup> This however indicates that, doses and methods of application are the important differences in determining the effect of the agent used<sup>16</sup>, which again suggests the importance of the system of treatment based on the theory of *similia similibus curentur*.



Moreover, certain benign tumours said to be responsive to homoeopathic system of treatment<sup>3,4,5</sup> are known to be precancerous in varying percentages and may degenerate into malignant forms (Figure 2). The human papilloma virus produces a transmissible benign neoplastic disease, some of which may undergo malignant transformation.<sup>24</sup> Warts are particularly common complication in patients with primary and secondary immunodeficiencies and in patients under immunosuppression.<sup>22,25</sup>

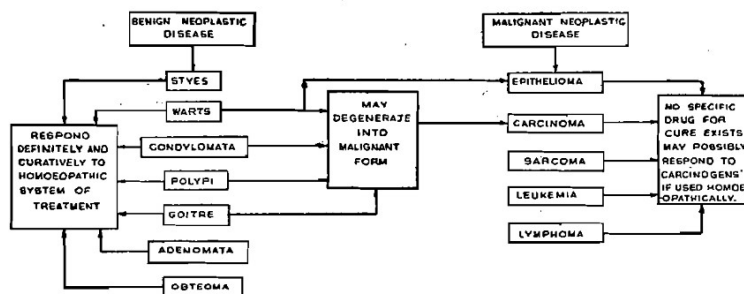


FIGURE 2

Non-cancerous tumours, known to respond curatively to homoeopathic system of treatment and their possible degeneration to malignant forms, have been shown. Warty overgrowth may degenerate into skin epithelioma.

Therefore Homoeopathy is possibly the necessary form of immunotherapy, which could be directed against the abnormalities of cancer cell that are responsible for its disorganised and invasive behavior.<sup>18</sup>

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