

A Survey on the Drugs of Animal Origin Used in Unani Medicine as Possible Alternative for the Cure of Sizable Human Ailments

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As all of us know that science is the systematic and unbiased study of all the things around us which can be seen or detected, while at some places it has also been mentioned that 'science is an unbroken continuous process in the crucible of time in which each generation makes its contribution'. It is a part of this process that, inspired by their predecessor, new generation of scientists make advances. They always take into consideration the earlier contributions as these have been a source of inspiration for the researchers of new generation and may prove to be stepping stone for future scientific achievements.

Background and Concept of Unani Medicine About Animal Origin Drugs

Keeping above in mind, various scientific studies were in recent times carried out to determine the role of medicines for the cure of human ailments without assessing their adverse effects on human body. Although lot of work has been done in this direction but no one can claim with authenticity the exact role or efficacy of any medicine it would eventually exert on when introduced in human system. It is because of this analogy that considerably large number of medicines produced by leading laboratories of the world, once found effective were later/after a long period of use, declared harmful to human system and had to be withdrawn, banned or replaced by one having less side effects. No doubt laws are there to resist abuse but as even with the sensible laws of course there's always a chance that any scientific technology latest being Biotechnology (cloning) though is not inherently bad will be misused. The real challenge before the scientist towards prevention and control of diseases is primarily to understand causes responsible for the occurrence of disease. The above-mentioned factor was the source of inspiration for scientists to carry out researches to evolve alternative system for the cure of sizeable human ailments on affordable cost. One alternative out of these existing alternative systems of treatment in practice is the Unani system of medicine which has very old history (as old as 2500 B.C.) and is quite rich in describing concepts regarding the prevention from diseases, thereby, providing assistance to maintain sound health without facing or facing to a lesser extent trauma of diseases. These concepts have strong basis towards the use of drugs of animal origin as they are in use and are also having great impact on health as per the reports of researches carried out by scientists in these directions from time to time.

This was the motivating force during past one decade that the concepts of Unani system of medicine got acceptability and thereby attracting considerable attention out of all the existing systems of treatment in medical science. The other basis for the use of this system is its innumerable potential coupled with the advantage of drugs of Unani origin (either animals or plants) having less side effects. Besides this it also got encouragement to be used as safe alternative in various parts of world, as it has potential for cure of many diseases lacking treatment in other systems of medicine. In addition to the above it will also prove helpful in countering the drugs abuse leading to drug

resistance due to its less side effects as reported in earlier studies. It is for this reason that the techniques in which drugs of animal origin, as well as the use of certain live animals (extract of whole animal) as well for the cure of diseases has gained considerable attention, though a lot of these reported drugs are in use since long. The only drawback for majority of Unani drugs though used extensively is that they have not been evaluated scientifically for their reported mode of action. This weak link can be strengthened by their careful physico-chemical and chemical studies with the help of latest technology in sophisticated drug standardization laboratories for evaluating their mode of action, efficacy and expected side effects if any.

Drugs of Insect Origin in Alternative Medicine

Amongst the Unani medicines of animal origin used for centuries, a sufficient number is from insect origin. However, so far available literature on this aspect shows that the individual use of drugs from insects origin was comparatively less reported. However, in 1996 Qureshi and Askari reported use of some medicines of animal origin with special reference to the drugs having insects as their source of origin. In this they mentioned that Blister beetles extract *Cantheridin* is used in certain problems related to Urogenital system. Further studies showed that Bee venom is used for treatment of arthritis; Allanton Excretion proved effective in treatment of osteomyelitis and deep wounds, whereas ladybird beetle (dried and powdered) can be safely recommended for the cure of mumps, live wasp is made to sting for the cure of nervous disorders; Dried Scorpion (*Bichoo*) powder mixed with vinegar was effective for treatment of leucoderma, dried and powdered. *B. bahuti* (Cochineal insects) emersed in boiling water serves as sedative and antispasmodic and Silkworm extract in the form of Khamira Abresham as cardiac tonic. It was also observed that the use of Whale-Amber, Crawfish, Cuban and Spanish spider, German and Oriental Cockroaches, yellow locust, Colorado bug and relevant insect drugs proved effective for various ailments (as reported by earlier workers).

Similarly the knowledge about the medicinal application of secretion of lac insects in India, Mexico and Thailand was known to man from prehistoric time. The Unani and Ayurvedic systems of medicine still make use of lac in their medicinal formulations. Some formulations prescribed for antiobese and anti-inflammatory activity have been containing lac as one of their major ingredients. It is also considered as blood purifier used for controlling blood pressure, whereas, the mixture of finely powdered shellac obtained from the insect with honey is given to restore homeostasis. In pharmaceutical industry lac is used in coating tablets, as it serves as moisture barrier thereby protecting core ingredients as enteric coating may serve the purpose of controlling its disintegration. As reported by Srivastava *et al.* (2007), a three percent coat of shellac is most suitable for colonic drug delivery and may be useful in treatment of diseases susceptible to diurnal rhythm such as asthma and arthritis etc. It is also used for coating vitamin C. As we know that shellac is acid resistant, therefore, any tablet coated with shellac will not dissolve in mouth and stomach having acidic medium and the coated protein only starts its work, when it finds its way down into your intestine.

Thus, there is an urgent need to scientifically evaluate the medicinal potential of lac and develop methodologies related to lac based medicinal formulation that could be prepared at the local level for treating simple ailments.

Some Known Animal Drugs

Apart from above, the various scientific studies carried out in this direction show that the following drugs obtained from various sources were also used for the cure of well-known diseases.

(i) *Jund bedastar*; the secretion of testes of the animal is used for the treatment of certain nervous disorders, epilepsy, hysteria etc.

(ii) *Kharateen*; the earthworm is kept in saline water for certain period and then dried and used both externally and internally as aphrodisiac.

(iii) *Sartaan* (Crabs); the ash obtained after burning the *Sartaan* proves effective for patient suffering from pulmonary tuberculosis.

(iv) Whale (*Amber*); is a secretion obtained from the mouth of Whale fish and is used to control tetanus, loss of sensation, palpitation and sexual debility. It is also found that Amber is the main constituent of various other drugs like – Khameera Gauzaban Ambar, Habb-e-Amber and Dawaul Misk Mo'tadil.

(v) *Mahi rubian*; is a fish extract used as cardiac tonic and aphrodisiac.

(vi) *Kafe-dariya*; extract of backbone of sea animal used as diuretic and also for the treatment of skin and eye disorders.

(vii) Pigeon; the blood and flesh obtained from pigeon proved effective for improving blood circulation, in the treatment of paralysis.

(viii) Apart from these there is another drug produced from the wax collected from honey comb found effective to get relief from polymenorrhoea, haemorrhoids, gastric ulcer and chest pains. Qairooti and Marham-e-Siyah etc. also contain this product from wax of honey comb as one of their ingredients.

Leeches

In addition to the above where drugs were obtained from animals sources there are certain cases where live animals have been used for treating certain diseases. Leeches, wasps and maggots are among the few organisms placed in this category.

As regards to Leeches there are about 300 species which have been included in genus *Hirudinaria*. The important species among them are as follows which are used for the cure of various diseases:

<i>Hirudinaria granulosa</i>	
<i>Hirudinaria viridis</i>	– Indian species
<i>Hirudinaria javonica</i>	
<i>Hirudinaria medicinalis</i>	– British species
<i>Hirudinaria australis</i>	– Australian species

Hirudo medicinalis (Medicinal leech) a British species is the most famous of all Hirudinea. It is so called because it was widely used in medicine during the 17th and 18th centuries. This species almost extinct at one time is now considered similar to *H. granulosa* (common Indian cattle leech) in habits and morphology. Most of the leeches used in phlebotomy lead semi-parasitic life, sucking blood of vertebrates; correspondingly showing several parasitic adaptations in their habits, habitat and in morphology are used in phlebotomy. Phlebotomy or blood letting off which is painlessly achieved by the application of leeches, was the common, though erroneous method of medical treatment in Europe in early 19th century.

Leech Application

As it has been reported earlier, that Leeches are generally useful on replanted digits, ring avulsion injuries and in small free flaps where there is good arterial inflow but no venous outflow. Therefore, before the decision to use leeches is made, it is recommended for safety and obtaining desirable results that consideration be given to other methods for improving circulation, such as operative revision of microvascular anastomoses and removal of sutures to relieve tension, etc.

Further, it has been also noted that some time in leech application there is persistent resistance of leech to attach itself to the infected joints, which is indicative of poor arterial blood supply. Therefore, while performing Phlebotomy it is very important that leeches only be used in conditions of venous congestion with good arterial inflow. As the insufficient arterial supply could lead to infection from any source, including the leech itself. To overcome this problem the following criteria may be help in diagnosing a true venous problem in a flap when:

* Skin Color	...	Dusky or bluish
* Capillary Return	...	Brisker than normal (note that areas of fixed coloration are beyond salvage)
* Pinprick Response	...	Bleeding should be rapid and dark
* History	...	Known problems with veins at operation, either in the pedicle or at the site of a microvascular anastomosis.

Leeches Application in Joint Pains

As we know that due to the physiological changes in the body and with the advancement in age synovial fluid inside the joints responsible for smooth and frictionless movement starts decreasing. This decrease causes dryness in the joints which leads to the increased sensitivity of pain and also causes difficulty in movements. This problem can be corrected by local application of certain ointment which will help in replenishment of osteoarthritis affecting joints of knee, hip and hands of both sexes in middle age and above for which the presenting features are pain in and around the affected joints movements. The other treatment advised for this purpose is to regulate the dietary supplements as well as scheduled exercise of the affected parts, which will help towards the ROM maintenance and strengthening of joints and surrounding tissues.

The other reason for joints pain is inflammation caused by presence of bonding material of connective tissue called hyaluronic acid, which in turn does not allow the smooth flow of the blood and fluids from the affected areas. This problem can also be corrected by the use of leeches, which will help in the removal of blocked vessels due to the formation of certain chemicals. The leech bite, therefore, helps in breaking down the bonding material hyaluronic acid at the site of application with the help of enzymes hyaluronidase, thus fastening the smooth flow of blood and fluids required for the normal functioning of the joints.

Similarly, the leech application was also found effective in certain cases of skin disease due to blood disorders, where when a doctor applied a lean and hungry leech to a person suffering from black eye or conspicuous black and blue spots on the body, thereby allowing the leech to remain attached at the infected part till it detached itself so as to suck impure blood. It thus helps in restoration of balance of blood to regain health, after which the leech therapy can be stopped when the skin stays pink and leech venous oozing ceases.

As we know from the available existing information that the use of leeches was frequent as alternative form of treatment for the cure of arthritis, joints pain and certain skin ailment during the period of Razi and Ibn Sina. But later the technique of leech therapy was ignored as the importance of leeches as means of making incision in letting off blood (Phlebotomy) for the relief of joints pain due to inflammation, started declining both in developed and developing countries because of lack of opportunity for contact with hosts and also due to the excessive use of available modern technology in the field of medicine. The drugs of modern medicine proved expensive as well as hazardous because of their side effects. The re-introduction of leech therapy shows that it may prove effective for certain human ailments (arthritis and skin diseases). This compelled the physicians to switch over to alternate system of treatment and that is why the re-introduction of leech therapy, which was tried decades back came again under practice. This therapy may help in redressing the normal arterial blood supply as the technique may help in removing the barrier responsible for disruptive blood flow the causative factor reported for the occurrence of diseases.

Apart from the advantage of having less side effect in the use of leeches it has other benefits as well, as its saliva contains many molecules of great medicinal interest along with the presence of a substance called *bdellin* and *elgin* which serve as anesthetics and make leech bites painless (as may serve as anticoagulant, vasodilator and mild antibiotic). Besides this, as mentioned above, the presence of another substance called histamine also serves as vasodilator that increases the diameter of the contracted blood vessels "responsible for the said ailment" thereby helping to promote the slowed down blood flow thus ensuring continuous normal blood flow in the blocked vessels of the diseased person, secondly it also serves as powerful anticoagulant that prevents blood from clotting in the region to which the leech is attached for several hours. The ability of the leech bite where it allows the wound to continue bleeding at the site of application for 24-48 hours appears to be related to pharmacologically active secretions (not the anticoagulant alone) introduced by the leech bite. This connotation gets support as the efforts to simulate this effect proved unsuccessful even after the introduction of conventional anticoagulant such as heparin into small stab wound in the skin.

From the above studies it is deduced that the leech's main therapeutic benefits are not derived only from the average 15 ml blood removed during bite, which helps to provide cure and relief from the agony of the disease as mentioned above but from the chemicals (*bdellin*, *elgin* and an enzyme *hyaluronidase*) present in the saliva, which it injects into the body of the host at the site of bite. These chemicals as mentioned above serve as anaesthetic, so that the incision is painless; as mild but effective local antibiotic so that the site of incision is infection free and also as vasodilator which causes the blood vessel near the bite to become enlarged (Mukul and Sharma, 2005). The leech

therapy is usually required for 3 to 7 days as during this period normally the new vessel in growth around flap margins is developed sufficiently to restore effective drainage. It is because of this unique combination of properties that leeches have been re-introduced into clinical practice as it is difficult to achieve desirable results using other medical techniques.

In addition to the above mentioned, leeches were also found useful in fungal infections, wet and chronic ulcers, boils, eczema, abscess, piles and filariasis, etc. as reported by earlier studies carried out in this direction.

Maggots Application

As far as maggots are concerned till 1-2 decades earlier, these larval stages of common flies in normal perception have worsened public image and various methods have been applied to control them. But the recent researches have proved that they can be of immense help in healing deep and infected wounds safely; with virtually less or no side effects and are also affordable as the therapy is inexpensive. This is a kind of treatment where maggots used at the site ate the diseased flesh of the wound as diet and in return excrete chemicals which will help to kill some of the bacteria responsible for keeping the wound alive that they don't swallow, leaving behind the healthy tissue to regrow and thereby allowing diseased part to regain health. The aspect of killing bacteria developed at the site of wound by maggots with the help of excreting certain chemicals is important for two reasons; one is that they help in restricting quite a few strains of bacteria developing resistance to antibiotics and secondly in some cases due to prolonged illness and excessive use of drugs the immune system of patient becomes weak which can't support antibiotics making it ineffective to weed out the infection necessary to regain sound health.

Conclusion

The above mentioned drugs of animal origin used in Unani System of medicine along with two therapies discussed can safely be recommended as effective alternative for the cure of human ailments at affordable cost and without any burden on other systems of the body as these methods have comparatively less side effects and which in addition allow the immune system to remain strengthened to counteract the disease, leading to recovery and to regain sound health at a faster speed. It is because of this reason that USA Food and Drug Administration has finally appended its seal of approval for the use of leeches in surgically transplanted or reattach appendages where it will help to drain excess blood, relieve pressure and stimulate normal circulation to support healing.

BIBLIOGRAPHY

1. Ibn Sina, (1990). *Al-Qanoon-fit-Tib*, Nizami Press, Lucknow.
2. Hakim Abdul Kaim (1992 A.D.). *Bustan-ul-Mufredat*, Bakai Publishers.
3. Nadkarni, K.M., (1985). *Indian Materia Medica*, Vol. I, Bombay Popular Parkashan, Bombay.
4. Ziauddin Ibn Baitar (1985). *Jame-ul-Mufredat Advia*, CCRUM, New Delhi.
5. Najmul Ghani, (1897). *Khazeenat-ul-Advia*, Munshi Naval Kishore, Lucknow.
6. Abubakar Bin Mohammad Zakariya Razi, (1980). *Kitabul-ul-Abdal*, CCRUM, New Delhi.
7. Mohammad Husain Sherazi, (1872). *Makhzan-ul-Advia*, Naval Kishore, Lucknow.
8. Hakeem Mohammad Azam Khan, (1313 A.H.). *Muheet-e-Azam*, Nizami Press, Lucknow.
9. Mukul Sharma, (2005). *Maggots and Leeches*.
10. Saleem A. Quraishi and Abid Askari, (1996). Some medicines of animal origin with special reference to insects, *Hamdard Medicus*, 39(3), pp. 41-49.
11. Samir Yahiya El Gammal, (1989). The Use of Microorganisms in Ancient Egypt, *Hamdard Medicus*, 32(1), p. 36.
12. Srivastava, S., Pal, G. and Ramani, R., (2007). The medicinal Lac, *Science Reporter*, pp. 24-25.