

HISTORICAL EVIDENCES ON MEDICO LEGAL AUTOPSY AND TOXICOLOGICAL DESCRIPTIONS IN *KAUṬILYA'S ARTHAŚĀSTRA*

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ABSTRACT

Kauṭilya's Arthaśāstra deals mainly the art of government, duties of Kings, ministers, officials and methods of diplomacy. It also deals with branches of internal and foreign policies, civil, military, commercial, fiscal, judicial etc. By name and popularity of the book, scholars believe this as seed of political science and Economics. Surprisingly, it also has the descriptions of many *Āyurvēda* herbs, metals, herbomineral preparations and poisonous substances. This book also deals with medico legal autopsy and Toxicology. The main aim of this article is to highlight the descriptions of forensic medicines and toxicology.

About the text

It is believed that *Kauṭilya*, whose name was *Viṣṇugupta* and popular as *Cāṇakya* (the son of *Cāṇakya*) wrote this *Arthaśāstra*. This article is mainly based on the *Kauṭilya's Arthaśāstra*, translated by R. Shamasastri. In the prefaces of 1st to 5th edition of this text, the translator Dr. R. Shamasastri tried to clarify the uncertainty regarding the name of the author and the time of the text. Kamandaka and Dandi quotations support the time of this treatise some where between 321 and 300 B.C. These quotations also support the authorship of *Viṣṇugupta*. According to *Kādambari* the author of *Arthaśāstra* was *Kauṭilya* and according to *Manu Dharmasāstrā*, *Cāṇakya* had written this *Arthaśāstra*. Though there are some controversies regarding the name of the author and time of this text, translator R. Samsastri tried his level best in providing proper support for naming this text as *Kauṭilya's Arthaśāstra* as the original available manuscript

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contains the name of *Kautilya* at the end of each of the hundred and fifty chapters of the work. Still there is controversy regarding the exact time of this text. If views of many scholars are concluded, it can be kept some where in between 3rd century B.C. to 3rd century A.D. This translated original text contains 15 books (Basic discussions of the text), 150 chapters, 180 sections and 6000 *Ślōkas* (Thirty two syllables are considered as one *Ślōka*).

Medico Legal Descriptions

In modern Forensic medicines much importance has been given to medico legal autopsy and causes of Death. In modern system of medicine it is called as Thanatology (which deals with death and its causes). In the same way in *Kautilya's Arthasāstra* in Book IV (4th division of the text) under the heading of removal of thorns, in chapter no VII "Examinations of sudden death" was described in detail. In this chapter it is mentioned that in cases of sudden death, the corpse shall be smeared over with oil and later examined. As it is mentioned in Thanatology of modern forensic medicine many medico legal aspects of causes of death were dealt in this text. Some of those are:-

Any person whose corpse is tainted with mucus and urine, with organs inflated with wind, with hands and legs swollen, with eyes open, and with neck marked with ligatures, may be regarded as having been killed by suffocation and suppression of breathing.

Any person with contracted arms and thighs may be regarded as having been killed by hanging.

Dead person with swollen hands, legs and belly, with sunken eyes and inflated navel, may be regarded as having been killed by hanging.

Dead person with stiffened rectum and eyes, with tongue bitten between the teeth, and with belly swollen may be considered as having been killed by drowning.

Dead person, wetted with blood and with limbs wounded and broken, may be regarded as having been killed with sticks or ropes.

Dead person with fractures and broken limbs may be regarded as having been thrown down.

Dead person with dark coloured hands, legs teeth and nails with loose skin, hairs fallen, flesh reduced and with face bedaubed with foam and saliva, may be regarded as having been poisoned.

Dead person of similar description with marks of a bleeding bite may be considered as having been bitten by serpents and other poisonous creatures.

Dead person with body spread and dress thrown out after excessive vomiting and purging may be considered as having been killed by the administration of the juice of the *Madana* (*Randia spinosa*) plant.

It is also mentioned death due to any one of the above causes is, sometimes under the fear of punishment, made to appear as having been brought about by voluntary hanging, by causing marks of ligature round the neck.

In death due to poison, the undigested portion of meal may be examined in milk. or the same extracted from the belly and thrown on fire may, if it makes "*Citcita*" sound and assumes the rainbow colour, be declared as poisoned.

Many other autopsy descriptions were mentioned in this text.

Toxicological descriptions

Toxicology is the science dealing with properties, actions, toxicity, fatal dose, detection, estimation and treatment of poisons. Forensic toxicology deals with medical and legal aspect of harmful effects of these poisonous substances on Human beings. Poison is a substance (solid, liquid or gas), which if introduced in the living body, or brought into contact with any part there off will produce ill health or death by its constitutional or local effects or both. In this text in Book XIV chapter I, under the heading of means to injury an enemy, many poisonous substances formulations and their actions were mentioned. Some of those are

Smoke made by burning the powder (prepared from the carcass) of animals like *Citra* (?), *Bhēka* (?), *Kaundinyaka* (?), *Kṛkana* (*Perdix sylvatica*), *Pañcakuṣṭha* (?) and *Śatapadi* (Centipede) causes instantaneous death.

Smoke made by burning the powder of animals like *Uccidinga* (crab), *Kambali*, *Kṛkalāsa* (lizard) with the powder of the bark of *Śatakānda* (*Phylis flexuosa*) or animals like *Gṛhagaulika* (small lizard), *Andhahika* (blind snake), *Kṛkanthaka* (a kind of partridge), *Pūtikīṭa* (a stinking insect) and *Gomārika* (?) combined with the juice of *Bhallātaka* (*Semecarpus anacardium*) and *Valgaka* (?) causes instantaneous death.

Any of the above insects may be heated with a black snake and *Priyaṅgu* (*Calicarpa macrophylla*) and reduced to powder. This mixture, when burnt, causes instantaneous death.

The powder prepared from the roots of *Dhāmārgava* (*Luffa cylindrica*) and *Yātudhāna* (?) mixed with the powder of the flower of *Bhallātaka* (*Semecarpus anacardium*) causes, when administered, death in the course of half a month. The root of *Vyāghāta* (*Cassia fistula*) reduced to powder with the flower of *Bhallātaka* (*Semecarpus anacardium*) mixed with the essence of an insect (*Kīta*) causes, when administered, death in the course of a month.

The smoke caused by burning the powder of *Śatakardama* (?) *Uchichidinga* (crab), *Karavīra* (*Nerium odorum*), *Kaṭutumbi* (*Largenaria siceraria*) and fish, together with chaff of the grains of *Madana* (*Randia spinosa*) and *Kōdrava* (*Paspalam scrobiculatum*), or with the chaff of the seeds of *Hastikarṇa* (*Leea macrophylla*) and *Palāśa* (*Butea monosperma*) destroys animal life as far as it is carried off by the wind.

The smoke caused by burning the powder of *Pūtikīṭa* (a stinging insect), fish, *Kaṭutumbi*, the bark of *Śatakardama* (?), and *Indragōpa* (the insect cochineal), or the powder of *Pūtikīṭa*, *Kṣudrarāla* (the resin of the plant, *Shorea robusta*) and *Hēmavidār* (?), mixed with the powder of the hoof and horn of a goat, causes blindness.

The smoke caused by burning the leaves of *Pūtikarāñja* (*Caesalpenia crista*) yellow arsenic, realgar, the seed of *Guñja* (*Abrus precatorius*), the chaff of the seeds of red cotton, *Āsphoṭa* (*Careya arborea*), *Khācha* and the dung and urine of a cow, causes blindness.

The smoke caused by burning the powder made of the mixture of the dung and urine of pigeons, frogs, flesh-eating animals, elephants, men and boars, the chaff and powder of barley mixed with *Kāsīsa* (green sulphate of iron), rice, the seeds of cotton, *Kutaja* (*Holarrhena antidysenterica*) and *Kōśātaki* (*Luffa pentandra*), cow's urine, the root of *Bhandi* (*Clerodendrum infrotunatum*) the powder of *Nimba* (*Azadirachta indica*), *Śigr* (*Moringa pterygosperma*), *Phanirjaka* (a kind of Tulasi plant), *Kṣiba Pīlu* (ripe *Salvadora persica*) and *Bhanga* (*Cannabis sativa*), the skin of a snake and fish, and the powder of the nails and tusk of an elephant, all mixed with the chaff of *Madana* and *Kodrava* (*Paspalam scrobiculatum*) or with the chaff of the seed of *Hastikarṇa* and *Palāśa* causes instantaneous death wherever the smoke is carried off by the wind.

The ointment prepared by mixing the excretion of *Śārika* (maina), *Kapōta* (pigeon), *Baka* (crane), and *Bālāka* (a kind of small crane) with the milk of *Mankāṣi* (*Hyperanthera morunga*), *Pīluka* and *Snuhi* (Euphorbia) causes blindness and poisons the water.

The mixture of *Yavaka* (*Śali viśēṣa*- a kind of rice), the root of *Śāla* (*Shorea robusta*), the fruit of *Madana*, the leaves of *Jāti* (nutmeg) and the urine of a man mixed with the powder of the root of *Plakṣa* (fig tree), and *Vidāri* (*Pueraria tuberosa*) as well as the essence of the decoction of *Musta* (a kind of poison), *Udumbara* (Glomerous fig tree), and *Kōdrava* (*Paspalam scrobiculatum*) or with decoction of *Hastikarṇa* and *Palāśa* is termed as the juice of *Madana* (*Madanayōga*).

The mixture of the powders of *Śrngī* (*Pistacia integerrima*), *Gaumēvrkṣa* (?), *Kaṅtakāri* (*Solanum xanthocarpum*) and *Mayūra pādi* (?) the powder of *Guñja* (*Abrus precatorius*) seeds, *Lāṅguli* (*Gloriosa superba*), *Viṣa Mūlika* (?) and *Ingudi* (*Balanitis aegyptiaca*) and the powder of *Karavīra* (Oleander), *Akṣipīluka* (*Careya arborea*), *Arka* (Calotropis) plant, and *Mrgamārini* (?) combine with the decoction of *Madana* and *Kodrava* or with that of *Hastikarṇa* and *Palāśa* , is the *Madana* mixture (*Madanayōga*). (Please note that remedies are also given in the following paras.)

These above two mixtures, poison the grass and water when those are applied to them.

The smoke caused by burning the mixture of the powders of *Kṛkana* (a kind of partridge), *Kṛkalasa* (lizard), *Gṛhagaulika* (a small house-lizard), and *Andhāhika* (a blind snake), destroys the eyes and causes madness.

The smoke caused by burning the mixture of *Kṛkalasa* and *Gṛhagaulika* causes leprosy.

The smoke caused by burning the same mixture together with the entrails of *Citrabheka* (a kind of frog of variegated colour) and *Madhu* (Honey), causes gonorrhoea.

The same mixture mixed with human blood causes consumption.

The mixture of the powder of *Māṭṛvahaka* (?), *Jāluka* (Leech), the tail of a peacock, the eyes of a frog, and *Pilu* cause the disease known as *Viśūcika* (Cholera?).

The powder of *Dūṣīviṣa* (type of poison), *Madana* and *Kodrava* (*Paspalum scrobiculatum*), destroys the tongue.

The mixture of *Pañcakuṣṭha* (?), *Kauṇḍinyaka* (?), *Rājavarṅka* (*Cassia fistula*), *Madhu puspa* (*Bassia latifolia*), and *Madhu* (honey) causes fever.

The mixture prepared from the powder of the knot of the tongue of *Bhasa* (a bird), and *Nakula* (Mongoose), reduced to a paste with the milk of a she-donkey, causes both dumbness and deafness.

Remedies for Toxins

In book XIV (secret means) under chapter IV (Remedies against the injuries of ones own army) some remedies (treatments) for poisonous substances and formulations were mentioned. Some of those are:-

To remove bad effects or poisonous effect, the things of the army, are washed in the tepid water prepared from the decoction of *Slēṣmātaka*, (*Cordia myxa*) *Kapi* (*Liquidamber orientalis*), *Madanti* (?), *Danta* (ivory), *Śatha* (Citron tree), *Gojigi* (*Gojihva* ? *Lamea asplenifolia*), *Viṣa* (*Aconitum ferox*), *Pātala* (*Steriospermum suaveolens*), *Bala* (*Sida cardifolia*), *Syonaka* (*Oroxylum indicum*), *Punarnava* (*Boerhavia diffusa*), *Śvēta* (*Albergia lucida*) and *Tagara* (*Valeriana wallichii*), mixed with *Candana* (sandal) and the blood of *Sālavṛki* (jackal), it removes the bad effects of poison.

The mixture prepared from the biles of *Prśata* (red spotted deer), *Nakula* (mongoose), *Nilakaṇṭha* (peacock), and *Gōdha* (alligator), with charcoal powder (*Maṣirāji*), combined with the sprouts (*Agra*) of *Sinduvāra* (*Vitex trifolia*), *Tagara*, *Varuna* (*Crataeva nurvula*), *Tanduliyaka* (*Amaranthus polygamus*), and *Śataparva* (*Bambusa arundinaceae*) together with *Piṇḍika* (?) removes the effects of the mixture of *Madana* (*Madanayōga* named poison).

Among the decoctions of the roots of *Śrīgala vrinta* (?), *Madana*, *Sinduvāra*, *Tagara*, *Varuṇa* and *Vallī* (a creeper?), any one or all mixed with milk removes, when drunk, the effects of the mixture of *Madana*.

The striking oil extracted from *Kaidārya* (*Murraya koenigii*) removes madness. The mixture prepared from *Priyāṅgu* (*Callicarpa macrophylla*) and *Naktamāla* (*Pongamia pinnata*) removes when applied through the nose, leprosy.

The mixture prepared from *Kuṣṭha* (*Saussurea lappa*) and *Lodhra* (*Symplocos racemosa*) removes consumption.

The mixture prepared from *Kaṭuphala* (*Luffa cylindrica*), *Dravanti* (*Crotan tiglium*) and *Vilaṅga* (*Vidaṅga- Emblia ribes*?) removes, when applied through the nose, headache and other diseases of head.

The application of the mixture prepared from *Priyangu*, *Mañjiṣṭha* (*Rubia cordifolia*) *Tagara*, *Madhūka* (*Madhuka indica*), *Haridra* (turmeric), and *Kṣaudra* (honey) to persons who have fallen senseless by being beaten by a rope, by falling into water, or by eating poison, or by being whipped, or by falling, resuscitates them. A round ball (*Maṇi*) prepared from the above mixture and containing gold (*Rukma*) in its centre, removes the effects due to any kind of poison.

A round ball (*Maṇi*) prepared from the wood of *Aśvattha* (holy fig tree-*Ficus religiosa*) growing round with the plants such as *Jivanti* (*Leptadenia reticulata*), *Śveta* (*Albizzia lucida*), the flower of *Mūskaka* (*Schrebera swieteniods*), and *Vandāka* (*Loranthus longiflorus*), removes the effects due to any kind of poison. The sound of trumpets painted with the above mixture destroys poison; whoever looks at a flag or banner besmeared with the above mixture will get rid of poison.

Discussion and conclusion

Basic seeds of medicine can be found in *Vēdas*. Later in India the system of medicine had its individual entity by the name of *Āyurvēda*, the science of life. This *Āyurvēda* literature can be found in the subsequent *Saṁhitā granthās*. *Cararka Saṁhitā*, *Suśruta saṁhitā*, *Aṣṭāṅga Hṛdaya*, *Aṣṭāṅga Saṅgraha* etc ancient *Āyurvēda Granthas* are the available *Āyurvēda* literature with different branches of medicines including *Viṣa varṇana* (description of poisons) and *Viṣacikitsā* (Treatment of poisons). Simultaneously many other ancient literatures like *Purāṇā*, *Upaniṣad* and *Itihāsa* also has scattered literature of medicine and its branches. This gives a rough idea about knowledge of those ancient scholars on *Āyurvēda* medicine. In the same way this ancient *Kauṭilya's Arthaśāstra* also has many descriptions related to medicine. Important thing is that many ancient *Āyurvēda Saṁhitā* do not have the descriptions related to Autopsies or forensic medicine. Probably this is the first text, which has these descriptions. If it is true, this text can be considered as basic text for forensic medicine and *Kauṭilya*, the author of book, can be considered as Father of Forensic medicine.

Like many *Āyurvēda* granthas, this text also has description of some plants, animals, metals that can be used as poisons as single drugs or formulations. Many of these poisonous substances like *Pancakuṣṭha*, *Kaundīnyaka*, *Viṣamūlika*, *Mrgamāriṇi*, *Kambali*, *Gomārika*, *Yatudhāna* etc. are unknown and there is a need of research to identify the same. This text also has the descriptions of treatments for many poisons. Along with these forensic and toxicological descriptions this text also contains so many peculiar yogas (formulations) different types of measurements, descriptions of different type's herbs, metals and animals. It can be concluded that this is an ancient text with important medical literature with all scopes for further study and research.

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सारांश

कौटिल्य अर्थशास्त्र में वैद्यक शास्त्रोक्त मृत्यु के पश्चात् शरीर की परीक्षा (मेडिकोलीगल अटॉप्सि) एवं विष वैज्ञानिक (टॉक्सीकोलॉजिकल) वर्णन का ऐतिहासिक प्रमाण

गोलि पेंचल प्रसाद, जी. बाबु एवं जी.के. स्वामी

कौटिल्य अर्थशास्त्र में देश-विदेश, राज-शासन, नागरिक, सैनिक, वाणिज्य और राजकार्य संबंधी अनेक अन्य विषयों के साथ वैद्यक शास्त्र से सम्बन्धित विषय भी प्रस्तुत किये गये हैं। मुख्य रूप से वैद्यक शास्त्र में मृत्यु के पश्चात् शरीर की परीक्षा के संबंध में जो वर्णन है वह ऐतिहासिक रूप से सर्वप्रथम वर्णन है। अनेक औषधियों एवं धातु संबंधी विषों का वर्णन एवं चिकित्सा भी इस ग्रन्थ में मिलते हैं। प्राचीन वैद्यक शास्त्र की अन्य शाखाओं जैसे मान परिभाषा, अद्भुत योग, द्रव्यगुणोक्त विषय आदि का वर्णन भी इस ग्रन्थ में मिलता है। प्राचीन अर्थशास्त्र में वर्णित मृत्यु के पश्चात् शरीर की परीक्षा एवं विष विज्ञान सम्बन्धित विषय की विशिष्टता बताना ही इस लेख का मुख्य उद्देश्य है।