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HISTORICAL PERSPECTIVES

Poppy and Opium in Ancient Times: Remedy or Narcotic?

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ABSTRACT

Ancient Egyptian and Greek pharmacopoeias reveal frequent use of different drugs, somniferous or narcotic, which contain poisonous elements. Among the toxic plants enumerated by Dioscorides, we find poppy and others. Egyptians were fond of taking these narcotic or euphoric substances attributed to *nepenthes,* but it is difficult to prove whether ancient people were aware of modern aspects of addiction. Poppy (*Papaver somniferum* L.) and opium have a more interesting history. Probably introduced into Egypt in the Ancient Kingdom, poppy was widely cultivated during the times of Akhenaton and Tutankhamon and even later. Opium was used to make people sleep, to relieve pain and to quiet the nerves because it acts on the nervous system and psychic functions. Even today, the etymologies of the twenty or so alkaloids it comprises, among them morphine, thebaine and heroin, sometimes recall Greek beliefs and Egyptian places. The Smith and Ebers Papyri show medical applications of poppy plants: to cure breast abscesses, to calm crying children, as eye drops and in ointments. Composed of many grains, poppy capsules were believed to have aphrodisiac properties and were a symbol of fertility. There are a few other indications that these drugs were used, but no signs of addiction among ancient people. *Biomed. Int. 2010; 1: 81-87. ©2010 Biomedicine International, Inc.*

Key Words: Addiction, Egypt, narcotic, Greek

INTRODUCTION

What was the mysterious *nepenthes*?

Ancient medicine was not always exclusively associated with the art of healing because whenever the use of magic was involved it could also bring about pain or death. This ambivalence becomes manifest in the word *pharmakon*, of Egyptian origin, which in turn comes from the expression *pHrt HkA* 'magician's remedy'. It can be a medicine in its positive sense, or a venom in its negative one. Related to herbalistic science and cooking in a positive sense, all these herbs, such as pepper or marjoram, were used not only to restore good health but also for their aroma or taste. They were also present among the ingredients of ancient Greek medicine and because of their healing properties were imported from all over the Mediterranean area, especially from Egypt. From time immemorial, in fact, this country was considered the most 'pharmaceutical' of the lands in the entire world, as certain passages of Homer's *Odyssey* demonstrate.

Polydamna, wife of the Egyptian king Thonis, gave Helena the mysterious *nepenthes*, a drug that could be slipped into wine and had the power to banish all painful memories (*Odyssey* IV, 219-233). She is said to have given Helena both her knowledge of medicine and that philter for magical results, probably a mixture of lethal Egyptian materials. However, we must admit that we know almost nothing about the composition of this substance. Etymologically, the word nepenthes can mean 'no grief' or 'no sorrow' as well as 'no pain'. However, it also means 'painless', 'giving no pain', or better still, 'canceling all pain', derived from its function. Polydamna, a proper name, also made reference to an adjective connected to remedies, the etymological meaning of which was 'giving pain in many ways' or 'to many people' (Aristarch from Samotracia, *Scholia Vetera Ad Odysseam* IV, 228). Homer also says that *nepenthes* was one of those products grown in the Egyptian fields: it could have been, perhaps, an official plant mixed with wine that had euphoric effects, causing feelings of joy and good humor (Plutarch, *Quaestione Convivium* 614 b-c). In fact, there was widespread use of wine as a common ingredient in a large number of ancient remedies, the most important effect of which was to make people sleep, a narcotic quality also attributed to *nepenthes*. Apart from this use, wine might have been a pleasant ingredient to

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mask other disagreeable tastes. Egyptians were fond of taking these euphoric substances, as Eustathius points out (*ad Odysseam* 160, 30).

Ancient Egyptian and Greek pharmacopoeias reveal frequent use of these kinds of drugs, sedatives, pain relievers or narcotics, which contain poisonous elements. These potions or draughts with noxious or deleterious components were commonly used by authorities in Ancient Civilizations not only to provoke death but also to alleviate misfortunes, forget suffering and lose fear (Plato, *Leges* I, 648a-649c). Modern commentators have rightly emphasized the bad aspect of addiction, and have thus tended to minimize the medical purpose of these draughts, which could alter the state or function of living beings; though it is difficult to prove whether ancient people were aware of these aspects of dependence or even addiction.

METHODS AND MATERIALS

To collect all the documentary information available about the subject, we have considered different ancient written sources, medical and literary papyri, as well as classical writers. But this material is not enough to elucidate the uses of poppy in ancient Egypt fully, so we also needed to study the representations of social life in Egyptian art under scientific iconographic rules. We used the ancient Greek patterns of behavior on the subject not only as a comparative tool but also as confirmation of the mutual influence between the two cultures in the late period, especially after the beginning of Ptolemaic rule and the schools of medicine in Alexandria.

Examination of different sources

Among the toxic plants enumerated by Dioscorides in his work on Materia Medica, we find black and white hellebore, henbane, mandrake, hemlock, poppy, and others. In these kinds of vegetables the secondary metabolites produce dangerous secretions, with a bitter taste and repulsive smell (odor sui generis), which is in fact a safety reaction. Opium has a more interesting history associated with the acquisition of wealth and prosperity and the most terrible degradation.

This milky liquid, found in the unripe fruit of the opium poppy (Papaver somniferum L.) and mentioned in the Ebers Papyrus as Spn, is supposed to have constituted the chief ingredient of the potion nepenthes, although in the Middle Ages, Michael Psellus (1018-1078) gave a tentative reconstructed recipe (Opuscula Logica 32, 1-2), which included different species such as mandrake, verdolaga and hellebore, but not poppy. It was probably introduced into Egypt in the Ancient Kingdom (c. 2705-2250 BC) because poppy seeds were found in a Meidum tomb of the IVth Dynasty. Without being native to Egypt, it probably formed part of the ancient flora of Low Egypt and its culture spread in the XVIII Dynasty (c. 1570-1293 BC). It was subsequently widely cultivated, during the times of Akhenaton (1350-1334 BC) and Tutankhamon (1334-1325 BC.) and even later.[1,2]

The flowers and fruits of Papapver somniferum, the queen of poppies, were frequently represented in the Amarna palace and temples (Figure 1) in scenes depicting Egyptian gardens (Figure 2) and were employed as patterns for earrings (Figure 3), necklaces, scepters and pendants of faïence, etc.

The floral garlands, collars and bouquets used in the cult of Osiris and also in funeral ceremonies, which were presented to the relatives of the deceased on the day of the burial, as well as at any other event cele-

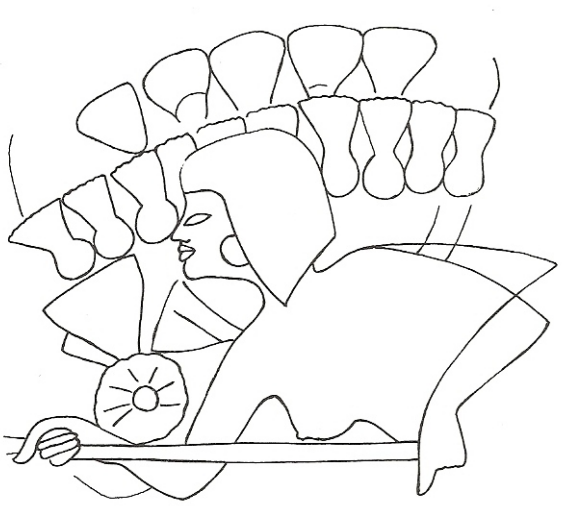

Figure 1. A woman pulling a rope? before a bouquet consisting of cornflowers, poppies and chrysanthemum? Relief from the temple of the Aten at el-Amarna, D. XVIII. Colección E. Kufler, Lucerna, (Manniche, L. An Ancient Egyptian Herbal: p. 131)

Figure 2. Cornflower, poppy and mandrake, a popular trio in Egyptian gardens. Wall-painting in Theban Tomb I, D. XIX. (Manniche L. An Ancient Egyptian Herbal: p. 13)

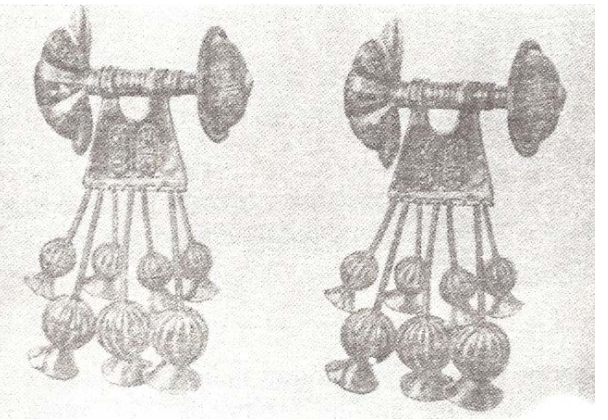

Figure 3. Two earrings formed of a collection of 7 fruits of a plant proved to be poppy capsules. Tomb of King Siphtah and Queen Tausrit, D. XVIII. (Ebeid N. Egyptian medicine in the days of the Pharaohs: p. 307)

brated in the necropolis, contained selections of these plants (Fig. 4). They consisted of olive and persea leaves, petals of blue and white lotus, heads of cornflowers, mandrake fruits, and poppy seed pods.[3]

Despite all this, there is no sound collateral evidence that a therapeutic use of opium was known in Egypt until after the time when the Ebers papyrus was written. Merillees[4] suggested that ring-based jugs, which resembled poppy heads[5], were used to import opium from Cyprus circa 1500 BC (Fig. 5). This importation would have stopped when Egyptians started to grow it themselves during the time of Amenophis III. Another proof of its use could have been the apparent presence of morphine in an alabaster jug of similar shape to that from the intact tomb of Kha (TT8) (XIX dynasty).[6] However, this has recently been denied and it is claimed that what that jug really should have contained was a type of alkaloid derived from helleborus, which was a drug in widespread use in Egypt at the time, employed after Plinius to prevent opium corruption.

Figure 4. The broad floral collar on Tutankhamon's innermost coffir XVIII. Egyptian Museum, Cairo, (Manniche L. An Ancient Egyptiar Herbal: p. 31)

Figure 5. Typical Cypriot ring-based jug resembling an inverted seed pot of *Papaver somniferum,* which may have been used to import opium into Egypt during the XVIII Dynasty. (Germer R. Die Heilpflanzen der Ägypter: p. 142)

"*However Bisset and his colleague, using modern analytical techniques, were unable to detect morphine in this juglet.*" [7] They are clearly of Egyptian origin, in their opinion, and not Cypriot.

Alkaloids, myths and symptoms

About 25% of this drug is active material in the form of some twenty alkaloids, complex chemical substances, the structures of which are formed on the basis of soluble salts and organic acids. Each has different effects or degrees of toxicity: some have soporific and convulsive effects such as morphine, present in large quantities (between 10 and 16%), narceine 1.5% and codeine, while others act as analgesics and sedatives such as thebaine and papaverine 1%, in addition to narcotice 6%, traces of laudanum (alcoholic tincture of opium; laudanum, an erroneous derivation from the Latin *ladanum* and the Greek λήδανον or *ladanon*, a fragrant and mucilaginous resin and a terpene alcohol, could in fact have been a mixture of opium, white wine and saffron, among other substances) and 30% extractive materials, oils, (greases, gums), resins, 20% mucilage and 10% water.[8] Opium is used to make people sleep, to relieve pain and to quiet the nerves on account of its action on the nervous system and psychic functions. The fatal dose varies between 2 and 4 grains. The derivatives of morphine, a hypno-analgesic substance that affects sensory perceptions, especially painful ones, are codeine (methylmorphine), thylmorphine, benzylmorphine and heroin (diacetylmorphine), which is five times more powerful.[9]

Even today, the etymologies of some of these alkaloids recall Greek beliefs and Egyptian places. For instance, thebaine makes reference to Thebes, a region where Egyptians cultivated poppies, probably to prepare the mysterious *nepenthes.* Diodorus Siculus (I, 97, 1-9) explained in the 1st century BC that Egyptian women in the 'Town of Zeus' (Thebe or Diospolis) continued to use *nepenthes* powder to cure both wrath and grief. Morphine was named after Morpheus, the God of dreams (Fig. 6), who sleeps on an ebony bed in a dark cave surrounded by poppies. The symbols of his father, Hypnos in Greek mythology (Fig. 7), are a poppy stalk and a horn pouring a soporific liquid.[10] Isis-Demeter (Fig. 8**)** also holds in her hands a poppy stalk and a sheaf of wheat, symbols of death and life, which recall Hypnos and Thanatos, sleep and death, the sons of Nix (Night). Finally, heroin comes from the Greek *heros*, because it provokes energy and decision among soldiers, loss of fear or hesitation in battle.

According to Nicander (*Alexipharmaca*. v. 433-464) (first part of 2nd century BC, c.132 BC), the *Papaver somniferum* capsules produced the following noxious symptoms in the victim: he falls into almost unconscious sleep, loses all muscle tone and sensory perception, and exudes fetid sweat through his skin; the eyes remain closed, a yellowish complexion becomes noticeable and his limbs appear frozen. Nowadays the usual symptoms of an overdose of opium are similar:

Figure 6. Nix and Morpheus, Johannes Schilling

Figure 7. Hypnos

drowsiness, nausea, pupils contracted to a pin-point, deep stupor and death resulting while the patient is in a coma.

From a pleasing and peaceful dream, and with the faculties of judgment still intact, the victim quickly dozes off, superficial sensation disappears and then the most important symptom appears: miosis, an abnormal constriction of the pupil of the eye, with bloody conjunctiva and, in the terminal phase, mydriasis, or excessive dilation of pupils, along with breathing difficulty, bradycardia and cardiac syncope.[11] In the past, to make him react, he was supposed to drink hot wine mixed with beeswax, have his limbs rubbed with rose, lily or olive oil and take a hot bath. Today, the best antidote is the intake of grains of potassium permanganate and then an emetic to remove its injurious consequences.

RESULTS

Uses of poppies in Antiquity

In Egypt another kind of papaverous plant (Papaver rhoeas L.) used to be cultivated, a field poppy employed in medicine and named Spn dshr (Fig. 9). Dioscorides (IV, 64) calls it mekon rhoias because its flowers drop very quickly. In fact, this name is connected with the Greek verb rhéo, which means to fall or to fade. In Plinius's view, this kind of papaverous plant was an intermediate species between cultivated and wild, which had a cadoucous flower that, boiled in wine, provoked sleep. This red poppy contains less morphine than Papaver somniferum. However, the seeds of this plant also contain a little morphine, so that the opium is normally prepared from the juice exuded when the seed pod is cut. The colors of the flowers of this plant, which is cultivated in gardens, are white, pink and mauve. Papaver rhoeas contains a substance that has been cleverly named rhoedaine. It is non-poisonous and has been used as a mild sedative for centuries. The ancient Romans used a concoction based on poppy to ease the pains of love, because they said that if you are sleeping you do not worry about love.

The Smith and Ebers Papyri (1550 BC.) show the different medical applications of poppy plants: they were used to calm crying children (Eb. 782) and also for external use as ophthalmic drops (Chassinat, Medical Coptic Papyrus), to cure breast abscesses (Smith 41) and in two ointments for hair-care (Eb. 440, 443 and 445). Poppy capsules are composed of many grains, like the pomegranate. They were believed to have aphrodisiac properties, and were, in addition, a symbol of fertility. In fact, the representations of fu-

Figure 8. Isis-Demeter

Figure 9. Red poppies (*Papaver rhoeas* L.). Wall-painting in Theban Tomb I, D. XIX. (Manniche L. An Ancient Egyptian Herbal: p. 130)

neral banquets in the tombs depict mandrakes, poppies, lilies, lotuses and other plants, considered narcotics that relax and are pressed to make perfumes (Fig. 10).[12] This could suggest that all these flowers were grown in gardens together with the vegetables that were eaten at those banquets (Fig. 11).[13] For example, tomb paintings often depict wine jars wrapped or draped in lotus flowers, suggesting that the Egyptians may have been aware of the narcotic qualities of blue lotus petals when mixed with wine. For instance, in the tomb of Paheri, an elegant lady is shown presenting her empty cup to a servant and saying "give me eighteen measures of wine, behold I should love [to drink] to drunkenness".[14] Cups with inebriant drinks were usually offered to the guests and to a husband by his wife. When it was taken in small doses, it was believed to have an aphrodisiac effect, as it helped accomplish the act of love, which was referred to as "achieving a happy day".[15]

Prospero Alpini (1553-1617), in his work on natural history in Egypt[16], provided a similar explanation for the use and the effects of opium in his time, despite the gulf of centuries: he claimed that opium stimulated men in war and in love, and caused spectacular dreams, hallucinations and, with the first doses, positive euphoria. When taken in large quantities, opium had side effects, and the Egyptian users became comatose, lethargic and infirm, and could even slip into a coma. Considered an aphrodisiac, opium was mixed with spices and was drunk or smoked. In agreement with ancient beliefs, Alpini claimed that the best opium came from a locality called Said (Upper Egypt), which he identified as the location of ancient Thebes (§ 160).

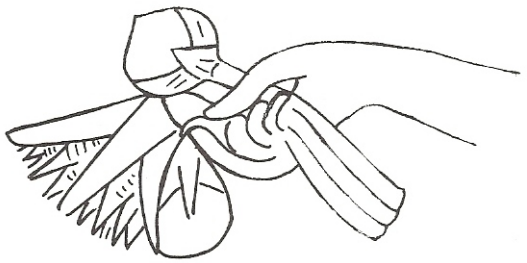

Figure 10. Lotus, mandrake and poppy? held by Tutankhamon. Scene incised on the king's golden shrine, D. XVIII, Egyptian Museum, Cairo. (Manniche L., An Ancient Egyptian Herbal, p. 117)

Figure 11. Gardeners among persea, sycamore fig, cornflowers, mandrake and poppies. In the pond are blue and white lotus flowers. Wall-painting in a Theban Tomb Ramesside 217. (Manniche L. An Ancient Egyptian Herbal: p. 12)

These substances were been considered to be of a cold nature, which was why they fought insomnia and induced sleep; sometimes they came as lotions to be used on the patient's head, and also as suppositories or poultices. Galen (129-210? AD) mentioned eight cooling substances, among which were mandrake (I, 649, 674 ; XI, 404, 421, 596, 751), opium (XIII, 155) and poppy (I, 649, XI, 404, 421, 596, 603, 751), which help the patient to sleep. When the juice of this plant is taken in small doses, it has analgesic, sedative and peptic effects. However, in large doses, it causes lethargy and can kill. Good quality opium has a bitter taste and a repulsive smell, and even the mere scent can cause drowsiness (Pedanius Dioscorides, IV, 64); when it is burned, it changes color, becoming darker, but it retains its unpleasant odor. When it is adulterated with glaucos, the color changes to that of saffron, whereas adulterated with lettuce, the soporific and deleterious juice of which resembles opium, the smell is not strong. Finally, when opium is blended with gum, the color is more translucent.

Gabra[17] puts forward the idea that both the Papaver species and opium were employed in ancient Egypt as a sedative and analgesic, in the same way as aspirin in modern times. Opium and wine are believed to have been used as analgesics and surgical anesthetics before the introduction of ether; yet there is no written proof of this in any known medical papyrus. Addens[18] suggests that these substances were used in cases of diarrhea, dysentery, fevers, asthma, chronic coughing, phthisis and diabetes, and as broad-spectrum painkillers. Although they have appeared in excavations and also in representations in palaces or tombs, we have no clear evidence that ancient Egyptians made use of this narcotic, which was available to them. It was probably known by the New Kingdom, but the papyri say nothing about the obvious uses of poppy as a narcotic and there is no reference at all to its use as an addictive drug.

DISCUSSION

Having said this, we may discuss a few supporting indications. In Amarna times, when growing poppies became more frequent, princesses were very often figured holding these and other narcotic plants, such as mandrake, lilies, and so on, and offering them to their partners (Fig. 12), something that might be considered evidence of consumption.

On the other hand, we know little about the cause of disappearance of his wife Nefertiti (Fig. 13) or the death of Tutankhamon, and many of Akhenaton's six young daughters are represented in scenes where they appear lying with voluptuous and odd gestures (Fig. 14). It is generally thought that those misfortunes were due to a foreign plague that had spread. However, they might also be put down to drug consumption.

Continuing our analysis of traditional Egyptian representative pictures, we could now study the way Ak-

Figure 12. Meritaton, daughter of Akhenaton, offering narcotic plants to his husband Semenkhare Egyptian Museum, Cairo, (A-P LECA. La médecine Égyptienne au temps des Pharaons, pl. X)

henaton's father is depicted. In fact, from his first Jubilee onwards, Pharaoh Amenofis III appeared with signs of rejuvenation, seeming younger than he really was. Certain characteristics, such as his renewed, widened eyes and dilated pupils (Fig. 15), could be considered substantial evidence that he was showing at least one of the symptoms of hallucination, mydriasis provoked by the consumption of morphine; and we could infer that this might have been the nature of the Pharaoh's condition.

This hypothesis could be further supported by the fact that during the later part of his reign, he neglected his government duties and left his family (his wife Tiye and his son Akhenaton) in charge of diplomacy. What is more, according to representations of the time, Amenofis started to look a lot worse, became increasingly weak, and seemed to have let himself go (Fig. 16). All this could show he had habits common in people who consumed drugs.

These attitudes were hardly frequent surprising during the late period of the Egyptian court, as a demotic source[19] explains. There is a lot of evidence for excessive consumption of both beer and wine. In fact, King Amasis (Dynasty XXVI) appears in tales about drunkenness. For instance, in the Saite Dynasty, c. VIII-VII BC., we have documented proof of this Pharaoh's behavior. Indeed, he used to drink so heavily that he was continually inebriated. When the morning arrived, the king could not rise on account of the great drunkenness in which he was sunk, thus raising complaints among his entourage about his lack of clarity in handling state matters. It could be said, from a general perspective, that these kinds of vices might have contributed to the decline of the Egyptian Empire.

Figure 14. Akhenaton's daughters at the feet of Nefertiti, facsimile of a wall-painting of Tell el-Amarna, Ashmolean Museum, Oxford. (D. Arnold. The royal women of Amarna: p. 57)

CONCLUSIONS

Before we conclude, some confirmations of similar views in the Ancient Greek world may be offered. There, opium, probably imported from Egypt according to Homer's history relating to nepenthes, was used to alleviate pains. In addition, it was frequently used mixed with hemlock for legal executions, as the well-known case of Socrates. From Plato's description of the philosopher's progressive death, it is assumed that the potion included opium.

Figure 13. Part of a late statuette of Nefertiti from the Thutmose workshop at Amarna in limestone. D.XVIII. Ägestisches Museum, Berlin. (D. Arnold. The royal women of Amarna: p. 78)

Figure 15. Bust of Pharaoh Amenofis III with signs of rejuvenation from his first Jubilee onwards with renewed, widened eyes and dilated pupils

Figure 16. Detail of a shrine stela of Amenofis III in the late period of his reign

As a bridge between Greek and Egyptian medicine, we can mention Erasistratus, a Greek physician active in Alexandria in the 3rd century BC.[20] He wrote against Herophilus´s use of opium as a remedy because of its lethal effects and its pernicious action upon vision. He nevertheless administered himself a kind of Socratic concoction in his own tough old age, a right to euthanasia acquired by citizens of Ceos Island, his birthplace.[21]

Taking all this into consideration, we could well say that the noxious and lethal effects of poppies and opium were well known in Antiquity, in addition to their frequent use as harmless medicines. However, it is not easy to prove that this drug provoked dependence or addiction in ancient people.

In memory of Dr. Guillermo Zanniello, my expert support and qualified guide in medical work.

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