Magic, Medicine and Fraud

David Johnson[1]

Abstract

The Nabataean role in the trade of frankincense and myrrh for use as incense and in perfumes is well-documented. Not often discussed is the role the Nabataeans played in the trade of these same products and other plant products such as the rock rose in medicine and magic. The major items traded through and produced at Petra used in magic and medicine were frankincense, myrrh, bdellion, balanos oil, gum laudanum, iunctus odoratus, terebinth resin, and juniper berries. In this paper, the role of the Nabataeans in this trade is examined by looking at the literary evidence from ancient writers such as Dioscorides, Pliny, and Galen, and the Greek magical papyri; a botanical survey of present day plants found at Petra; and the archaeological evidence from Nabataean sculpture, painting and pottery.

Keywords: Nabataean trade, plant products, magic, medicine.

Introduction

The Nabataean role in the trade of frankincense and myrrh for use as incense and in perfumes is well-documented. Not often discussed is the role the Nabataeans played in the trade of these products and other plant products such as sap from the rock rose in medicine and magic. In this paper, the role of the Nabataeans in this trade is examined by looking at the literary evidence from ancient writers such as Dioscorides, Pliny, and Galen, and the Greek magical papyri; botanical evidence from present day plants at Petra; and the archaeological evidence from Nabataean sculpture and pottery. Among the major plant products exported by the Nabataeans, three, frankincense, myrrh and bdellium originated outside of Nabataea proper while others, iunctus odoratus, gum labdanum, balanites oil, and terebinth resin, were produced in Nabataea itself.

Long distance trade is often examined archaeologically in terms of one item that has a source,a distribution network, points of production, and major uses. Examples include Renfrew's classic study of obsidian trade in the Neolithic period, Hermann's research on Lapis Lazuli trade into Mesopotamia, and my own study of Nabataean incense trade. Though useful models for examining trade

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networks, in reality the situation in a trade network is more complex than this. One aspect of this complexity is the secondary uses of trade products that may not be affected in the same way as the main use of a product in terms of supply and demand. In the Nabataean case, high demand for perfumed oils and frankincense probably decreased greatly in the 3rd and 4th centuries A.D. due to economic decline and the rise of Christianity while demand for these same items in medicine and magic may have remained the same.

Medicine in the Greco-Roman period

Medical or health care in the Greco-Roman period was administered at three levels. At the top was elite/learned rationalistic medicine practiced by physicians. Second, there was medical practice in temples that included prayer and votive offerings to various deities. Third, popular or folk medicine to avert or remedy illness was practiced by people who did not claim expertise in learned medicine and often involved magical spells (Harris 2016: vii). At all these levels, medicinal plants or plant products played an important role.

These plants products, just like in the lithotherapeutics industry that marketed medicinal minerals were probably transported by wholesellers called mercatores who shipped items for clients across many sectors of the economy. They were then sold to physicians and others by specific retailers called pharmakopolai who keep their products in small boxes.(Photos-Jones 2018:3-4). Examples of wooden boxes containing pharmaceuticals were found in an archaeological contexts from a trading ship wrecked around 130 B.C. off the coast of Tuscany (Giacchi et al. 2013:1193).

The increase in medicinal plant materials from the Middle East and India used in medicine during the 1st centuries B.C.-A.D is noted by Pliny who complains about their cost and effectiveness vis a vis local plants.

- "All of a sudden potions and intricate mixtures are praised, Arabia and India are considered cure-alls, and medicine from the Red Sea is applied for a small sore, as all the poorest dine daily on the real cures. For if herbs are gotten or shrubs sought from the garden, no other art would be more affordable. Thus it is clear that the Roman people have destroyed their customs by growing too large, and we have been conquered by the act of conquering." (Pliny *Natural History* 24.4-5)

Sources

Unfortunately, there are no written Nabataean sources that deal with trade, medicine, magic or the use of plant products, so the information that is available on this trade comes mostly from Greek, Roman and Egyptian sources. These include the *Natural History* of Pliny (A.D. 23-79), Nicander of Colophon's works, *Theriaca* and *Alexipharmaca* on poisons and there antidotes(mid 2nd century B.C.), the medical and pharmacology texts of Galen(A.D. 129-200), *De Re Medicina* of Celsus(c. A.D. 30)and *De Materia medica* of Dioscorides (A.D. 54-70) and other later medical writers, and the Greek Magical Papyri from Egypt. (1st-4th Centuries A.D.)

Frankincense

Frankincense is the resinous gum from the tree Boswellia carteri imported into the Greco-Roman region from the Dhofar area of Oman(Fig. 1). It was called *Libanon* or *Thus* and was usually used as incense burned in temples, homes and at funerals. Much of the frankincense imported went through Nabataea by either the overland or Red Sea routes (Johnson 1988).

Figure 1. Frankincense resin from a tree in Oman; © D. Johnson.

Frankincense was also an important ingredient used in both medicine and magic. In the Greek Magical Papyri (PDM XIV 1015-20) it is used to heal gout.

> "Prescription for a gouty foot, Garlic, frankincense, genuine oil. Pound them, anoint him with it."

Heracleides of Tarentum,a Greek physician in Southern Italy, wrote about medicinal herbs in his *Symposium* dated to c. 70 B.C.. To heal heavy diarrhea and oozing wounds, he recommended a compound that combined pomegranate rinds, birthwort, oak galls, ammoniac salt, frankincense, alum, copper sulfate and myrrh quaffed in a thick raisin wine.(Scarborough 2011:6).

Many of the pain remedies used in the Greco-Roman world also used frankincense (Bartels et al. 2006:213). Celsus in his *De Medicina,*written early in the 1st century A.D., describes an emollient for pain in the side made up of turpentine resin and frankincense soot, each 16 g, and 16 g of bdellium, ammoniacum, iris, calf's or goat's kidney suet, and mistletoe juice(Celsus, *Book V*:18,6). Also the pain associated with blows to the face could be alleviated by

applying a compound made from 8 g of aristolochia and thapsia with the addition of 16 g of bdellium, storax, ammoniacum, galbanum dried resin, liquid from lentiscus resin, male frankincense and Illyrian iris wax (Celsus, Book V:18,24). Frankincense would have been especially useful since as Dioscorides describes,

"It is of force… To glue together bloody wounds and it is of force to suppress all flux of blood"(Dioscorides, *Materia Medici*,Book 1:81).

Galen also mentions the use of plasters for gluing wounds shut using frankincense as one of the ingredients. He describes the *Enaimos of Julian; Another Plaster for Gluing Wounds Shut*:

50 drachmas of litharge, 50 drachmas of *asphaltos,* (another product of Nabataea), 50 drachmas of beeswax, 50 drachmas of Bruttian pine pitch, 15 drachmas of roasted pine resin, 12 drachmas of the "flakes of copper",14 drachmas of frankincense, eight drachmas of galbanum, 4 drachmas of rock alum, 6 drachmas of aloe, 4 drachmas of oak gall, 4 drachmas of myrrh, 6 drachmas of long birthwort, 4 drachmas of round birthwort, and 4 *kotylai* of old olive oil (Galen, *Compounding Drugs by Kind,* 11:2).

This pain relieving property of frankincense is due to the presence of the cannabimimetic opioid compound, Incensole Acetate which applied transdermally would have produced pain relief. (Bartels et al. 2006: 214-215).

Frankincense was also used in magic. In the Greek Magical Papyri it is mentioned eight times, almost always burnt as part of a magical spell. For example, PDM XIV 154, a lamp inquiry of gods states that to make the spell work

- "You should put pure frankincense on a brazier while you are putting your finger on the youth's head, his eyes being closed."

Myrrh

Myrrh was also extensively used in medicine and much more than frankincense in magic. Myrrh is the gum from various species of *Commiphora myrrha* found in Southern Arabia and Horn of Africa and is usually used as an unguent with various oils (Fig 2).

Figure 2 Myrrh oil; © D. Johnson.

Myrrh oil was typical used as perfume, burned in lamps and as an anointing oil. Most myrrh oil and other oils were traded and stored in unguentaria (Fig 3).

Figure 3 Unguentarium from Wadi Mataha; © D. Johnson.

A recent Michigan study (Mortenson 2014) indicates that both glass and ceramic unguentaria were used to hold precious oils, mainly myrrh and spikenard in olive oil with some pine or terebinth products.

Myrrh's was used quite frequently in medicine. Celsus in his *De Medicina,* written early in the 1st century A.D., describes an emollient for pain in the liver made up of 48 g of balsam tears and 64 grams of the following; costmary, cinnamon, cassia bark, myrrh, saffron, round rush, balsam seeds, iris, cardamom, amomum and nard (Celsus, Book V:18,3). Another ancient drug for diarrhea recommended by Heracleides of Tarentum(70 B.C.) called "The Nines" incorporates birthwort, substantial amounts of old myrrh, opium poppy, pellitory root, wild rue seeds, African cumin and the seeds of the far Eastern psoralea. (Scarborough 2011:6) Again, Scribonius's compound to treat bladder stones (Scarborough 2011:7) included a number of ingredients mixed with honey including oil of camel grass and ½ drachma of myrrh. Dioscorides, in his *Materia Medicii* describes the use of myrrh in a potion with birthwort as a drug beneficial to women in childbirth(Wellman Vol 2:177-178).Galen describes the *Enaimos of Julian:Another Plaster for Gluing Wounds Shut* as follows:

" 50 drachmas of litharge, 50 drachmas of asphaltos,50 drachmas of beeswax, 50 drachmas of Bruttian pine pitch, 15 drachmas of roasted pine resin,12 drachmas of flakes of copper, 14 drachmas of frankincense, eight drachmas of galbanum, 4 drachmas of rock alum, 6 drachmas of aloe, 4 drachmas of oak-gall,4 drachmas of

myrrh, 6 drachmas of long birthwort, 4 drachmas of round birthwort,And 4 kotylai of old olive oil."

Asphaltos probably Dead Sea bitumen, frankincense, and myrrh were all items traded by the Nabataeans. According to Nicander of Colophon, (myrrh was also useful against snakebite (Theriaca 600) and poisoning by litharge or lead (Alexipharmaca 602). Recent research (Dolara et al 1996) indicates that myrrh has opiate qualities that would be useful in various medicines.

Myrrh was also one of the major items used in magic in the Greco-Roman Period. It was used both in myrrh ink and as an incense in rituals. There are at least 47 references to myrrh ink in the Greek Magical Papyri. These include PGM I,1-42;PGM III,165-86; PGM IV,850-929; PGM VII, 467-477; and many other examples. Myrrh ink was used to write spells on a number of mediums including parchment, papyrus, three cornered pottery sherds and even seashells. For example, PGM IV 2219-2226

"Spell that restrains. Write on seashell in the ink(myrrh ink) mentioned below adding Typhon's blood(donkey blood). Bury the shell in the tomb of someone who died untimely"

The production of Myrrh ink is described in PGM I, 244-247.

"This is also the composition of the ink. Myrrh troglitis,4 drams; 3 Karian figs, 7 pits of Nicholas dates, 7 dried pinecones, 7 piths of single stemmed wormwood, 7 wings of Hermaic ibis, spring water. When you have burned the ingredients, prepare them and write."

One of the Nabataean interests in this trade is the fact that Myrrh troglitis, mentioned in the formula, was traded from the area of the Cave dwelling Nabataeans on west coast of Red Sea along with cancamun (Gardenia gummifera), tarum (Aloe wood), and also serichatum and gabalium (unknown items) (Pliny NH,XII, 44-45).

There are also 42 references in the Greek magical papyri to myrrh used in offerings. For example, in PGM IV, 2461 myrrh is one of the items pounded in a mortar with a mouse to produce a spell of attraction. Again, PGM IV,1830-1840, the spell for the Sword of Dardonos mentions a burnt offering with myrhh, frankincense, bdellium, and other items.

Bdellium

Bdellium is the gum of either Commiphora wightii, Indian myrrh called guggul or of Commiphora Africana found in the Sudan and Ethiopia.

Dioscorides (M.M. 80) states that it comes from India and Nabataea

"There Is another sort of it, that is filthy and black of greater pieces, rolled up into gobbets brought out of India, it is brought also out of a town called Petra, dry, resinie, subliudum, next in strength to the first"

In the Byzantine Period, in the *The Seven Books of Paulus Aeginata.(*Book VII:70) bdellium is mentioned from Arabia

" both the Scythian and the Arabian are possessed of powers which prove emollient of industrial tumors, more especially the recent. The Arabian is also diuretic, lithontriiptic and digestive."

As mentioned before, Bdellium is one of the ingredients in Celsus' remedies for both pain in the side (V.18.6) and from blows to the face(v. 18. 24). In traditional Indian medicine, bdellium is used to treat arthritis, artheroschlerosis, skin diseases and obesity (Sarup et al. 2015:1). There is no mention, however, of bdellium gum as an ingredient in any of the spells in the Greek Magical Papyri.

Plant products from Petra and Nabataea

Besides the medicinal and magic plant products traded through Petra, there are a number of plant products native to the Nabataean area itself that were used in medicine and magic. These include iunctus odoratus, gum labdanum, balanites oil,and terebinth resin. Iunctus odoratus comes from Cymbopogon scoenus, of the Family Poaceae, commonly known as camel grass in English and ethker, tibn maktah or abu rekhba in Arabic. Danin 1983:125 states that it is found in the low lying areas of Sinai/Arabia,the coast of the Gulf of Aqaba and the marshes of the Wadi Arab and is used by the Bedouin to make a sweet smelling tea.

In the Materia Medica of Dioscorides,16,17 Iunctus odoratus is described as coming from Petra.

> "Iunctus odoratus,some grows in Libya and some in Arabia and again some in that part of Arabia which is called Nabataea which is the best. But the Arabic is the next, which some call Babylonian, others Teuchitis, but that of Libya is unprofitable."

Pliny (XIII. II. 9-19) mentions it as an important element in a number of well known unguents such as metopium, oil of rose, melinium, megalium, kinnanomium, myrtle oil, and nardium. In medicine, both the flowers and the roots were used. In the Materia Medici, 21.

> "The flowers of it used in drink are good for bloody vomiting and a painful stomach, as well as lungs, liver and kidneys"

Again from the Materia Medici, 21,an extract from the root was thought to cure dropsy and convulsions. In magic, Iunctus odoratus was an important ingredient along with frankincense and bdellion in the composite incense Kuphi, which is mentioned four times in the Greek Magical Papyri. In one spell, Kuphi is burned while picking magical herbs (PGM IV 2967-3006) and also burned while preparing a magical ring of Hermes (PGM V,213-3303.).

Gum Laudanum

Gum laudanum is the sap from Heilanthemum lippi, the yellow rock rose, or Helianthemum vesicarium, the pink rock rose from the Family Cistacae. Both H.lippi, which is native to Southern Jordan and H.vesicarium which is native to Southern Jordan and into the Negev desert, are quite common at Petra.(Ruben and Disi 2006:34,52).

Pliny(NH XII 37.730 indicates it came from Nabataea

> "Arabia also boasts her laudanum. A considerable number of writers stated that this becomes aromatic entirely by accident and owing to an injury; goats, they say, an animal very destructive of foliage in general, but especially fond of scented bushes, as if understanding the prices they fetch, crop the stalks of the shoots, which swell with an extremely sweet liquid and wipe off with the nasty shaggy hair of their beards the juice dropping from the stalks in a random mixture, and is baked by the sun; and that is the reason goats hairs are found in laudanum; though they say this does not take place anywhere else but in the territory of the Nabataei, a people from Arabia who border on Syria."

In medicine, it was used in medical plasters (Celsus II 40),as a cure for disease induced baldness, pains in the ear and stomach, and to reduce scaring and coughing (MM I.128). Pliny (XXVI.30) further states

"Diarrhea may also be arrested by the use of either kind of laudanum."

And that

> "Ledon is the name of the plant from which laudanum is obtained in Cyprus, it is found adhering to the beards of goats there, the most esteemed, however is that of Arabia."

He further indicates it medicinal use with other plant products.

"In combination with hydromel or oil of roses, it is used as an injection for the ears, with the addition of salt it is employed for the cure of eruptions of the skin, and for running ulcers, Taken with storax, it is good for chronic cough."

Modern pharmacological research indicates it is useful for treating ulcers, hemorhoids and dermatological disorders as well being anti-inflammatory, analgesic and having beneficial effects on the hair cycle (Lardos, Prieto-Garcia and Heinrich 2011:20).

Archaeological evidence of the importance of the five petaled rock rose in Nabataea may be seen in the Temple of the Winged Lions, where some five petaled molded plaster flowers gilded and veined were found associated with Nabataean capitols(Hammond 1996 79,112). Five petaled flowers are also a common motif in Nabataean capitols from the Qasr Bint Faraun and Khazneh at Petra.

Balanos oil

Balanos oil is aromatic oil produced by pressing the fruit of Balanites aegyptica, a thorny bush common in the hot deserts oasis and wadis of the eastern Judaean desert, the Dead Sea area and the northern Wadi Arabah. It also is native to Egypt and India. It grows up to six meters in height, with a few paired sets of leaves and spines. Its fleshy fruit is pressed to produce an edible oil, which is also used today in medicine and soap manufacture (Zohary 1972:258). In the Greco-Roman Period it was the oil most commonly used in the production of high quality unguents since it was the least viscous and tended to keep for the longest time (Theophrastus CO IV.5). Dioscorides in his Materia Medica indicates that it was grown at Petra

"Glans unguentaria is the fruit of a tree like myrica, suitable to that which is called the Pontic nut, of which, that within being pressed, like as the bitter almonds, it yields a moisture, which they use for precious ointments instead of oil. But it grows in Ethiopia, and Egypt and Arabia and in Petra, a town by Judaea." (M. Medica 160).

Pliny describes the balanos plant, which he calls myrobalanum, in his Natural History (XII.46.100-101) and indicates it is found in Egypt, in the Cave Dweller country in Ethiopia and in Arabia where it separates Judaea from Egypt. He confirms the quality of the oil from Petra by stating

" but the Petraean kind, coming from the town mentioned above is a long way the best" (NH XII. 46.102)

In medicine, balanos oil is mentioned as early as the Ebers papyrus from Egypt dated to 1600 B.C. were it is used to repel gnats (Ebers Papyrus section 98) and as an ingredient along with red ochre and the juice of the tamarisk in remedies for an ear whose hearing is poor (section 764), or for a bewitched ear (sect 768) or for a dry ear that emits humor (section 770). In the Greco-Roman Period, Pliny describes it a used with astringent wine to arrest diarrhea, catamenia, and to promote the cicatrization of wounds (NH XXII). Recent research indicates that balanos oil can be used to treat tumors and wounds, diarrhea, stomach aches and fever (Sabos 2014:76).

Terebinth Resin

A major resin used in unguents, in medicine and for magic was produced from the terebinth tree, *Pistachia terebinthus* which is usually found growing in soil pockets in smooth faced outcrops of limestone and sandstone(Danin 1983:102). It is a fairly common tree (Fig 4)

Figure 4. Terebinth tree at Petra; © D. Johnson.

at Petra today, especially on the higher limestone slops of Jebel Shar'a and Jebel Kubta, where it is intermixed with *Pistacia khinjuks*, a rare variety of the Pistacia family found only at Petra and in the mountains of the southern Sinai (Zohary 1972:298). Dioscorides (MM 1.91) indicates that terebinth resin was considered superior to all other forms of resin and mentions it major sources

"Terebinthus is a known tree, of which the leaves and the fruit and the bark are binding, are good for some things that the Lentisk is, being ordered and taken after the same manner."

"The resin thereof is brought out of Arabia Petrae. It grows also in Judaea and Syria and in Africa and in the Cyclades. That is preferred which is most clear, white, of a glassy color."

In medicine, terebinth resin was used extensively. For example,terebinth resin cooked with butter and honey was a medicant used for acute fever (Celsus De medicina III,22.13). Celsus also mentions it as part of enchrista, a liquid medicant made from butter, veal bone marrow, veal fat, goose, wax, honey, terebinth resin, rose and castor oil that was a cure for ulcers (Celsus V. 2). Pliny (XXX 353) states

> "indurations in deep seated ulcers and carcinomata are penetrated by multipedes pounded and mixed with terebinth resin and earth of Sinope."

Terebinth resin often an important element in embalming and mummification. In magic, it was an ingredient in the Bear Charm(PGM IV 1275-1322),which accomplishes everything

> "4 drams of frankincense, 4 drams of myrrh, 2 ounces each of cassia leaf and of white pepper, 1 dram of bdellion, 1 dram of asphodel, 2 drams each of amomon,of saffron, of terebinth storax, 1 dram of wormwood……. Combine these with Mendesian wine and honey and make pellets of bread"

Terebinth resin has been found in a number of archaeological contexts dating as early as the Minoan period. In Minoan art, terebinth is often depicted as a long stem plant with paired elongated oval shaped leaves on each side(Beckman 2012:38). Depictions of Nabataean fine ware(Khairy 1983:20) with impressed and rouletted decoration show many examples of long series of paired elongated oval leaves around a central axis possibly terebinth. Similiar types of incised and stamped sherds have been found in the Wadi Mataha(Fig.5)

Juniper Resin

One other plant product common at Petra was used to counterfeit many of the resins used in magic and medicine. This is the gum of Juniperus Phoenicia of the pine family that is found in the outcrops of massive sandstone at Petra(Fig 6).

Juniper Resin is used by Bedouin of the Negev to produce incense for religious purposes (Danin 1983:104). According to Pliny (NH.XII 54.120)

> "Balsam is adulterated with the ground Pine of Petra which can be detected by its size, hollowness and long shape and by its weak scent and it tastes like pepper." (Pliny NH.XII 54.120)

Figure 5. Stamped sherd with leaf motif; © D. Johnson.

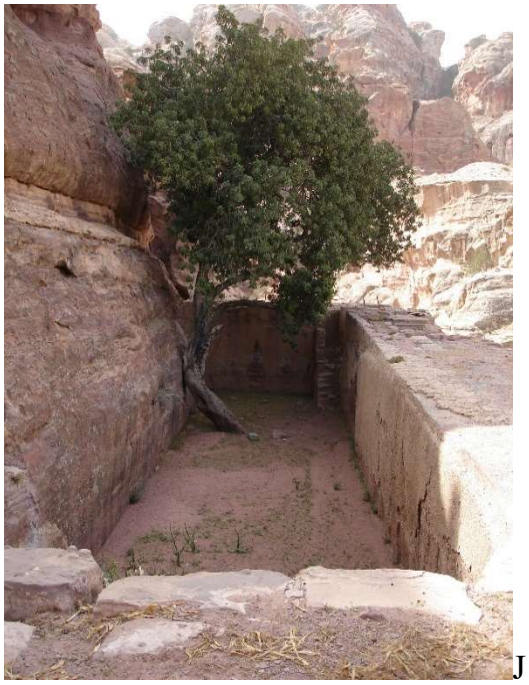
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Figure 6 Juniper tree in Wadi Farasa; © D. Johnson.

Dioscorides also mentions it use to counterfeit balsam and frankincense

> "There is brought from the town Petra a seed like unto Hypericum whereas they counterfeit this fruit(Balsam)which you may know hereby,because that it is greater and empty, of no strength, of the flavor of pepper." (Materia Medica 18)

Referring to frankincense, Dioscorides states "All thus is adulterated with Resin of the Pine and with gum,being artificially handled."(M.Medica I 81)

Also,according to Dioscorides, the bark of the juniper was used as a substitute for frankincense bark, and the resin as a substitute for manna of frankincense (M.Medica I 82-83).

Conclusion

Along with the major role of frankincense and myrrh and other plant products traded from Nabataea into the Greco-Roman area as incense and perfumes, there was also a secondary market for these products in medicine and magic. Plant resins such as frankincense, myrrh and bdellion, traded through Petra, and other plant products native to Nabataea, iunctus odoratus, balanos oil, terebinth resin, and gum laudanum were all used as medicine or as important ingredients in magic spells. Many of them have been shown to have beneficial medicinal properties in modern day chemical and medicinal studies. This secondary market may have helped sustain trade through Petra even after the economic collapse of the trade in plant resins for perfume and incense in the 3rd century C.E.

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السحر والطبّ والاحتيال

ديفيد جونسون

ملخص

إنّ دور الأنباط في تجارة البخور والمرّ لاستخدامهما في التبخير وفي العطور موثَّقٌ بشكل كبير، وقد نوقِشَ على نحوٍ أقلّ الدَّورُ الذي أدّاهُ الأنباطُ في تجارة تلك المنتجات ومنتجات نباتيّة أُخرى، مثل زهرة الصّخر في الدواء والسّحر. إنّ الموادّ الرئيسة التي جرى الاتِّجارُ بها من خلال البترا، التي أُنتِجَت في البترا واستُخدِمَت في السّحر والدواء هي البخور، والمرّ، والمقل، وزيت البلانوس، ولبان لودانوم، والبطم، والصمغ، وتوت العرعر. وعليه، فَسَتَقِفُ هذه الدراسة على دور الأنباط في هذه التجارة من خلال النظر في الدليل الأدبيّ من كُتّاب قُدامى، أمثال ديوسكوريدس وبليني وجالن، والمخطوطة السحريّة اليونانيّة، ومسح نباتيّ للنباتات الموجودة في الوقت الحاضر في البترا، والدليل الأثريّ منَ النحت والرسم والخزف النبطيّ.

الكلمات الدالة: تجارة الأنباط، منتجات نباتيّة، السّحر، الدواء.

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