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ALOE IN THE GREEK POPYRI OF GRECO-ROMAN AND LATE ANTIQUE EGYPT. A Contribution Concerning the Aloe Supply and Use in Antiquity

DIMITRIS ROUMPEKAS

Aloe, the famous succulent plant with large fleshy leaves, is one of the most widespread pharmaceutical plants. Its translucent, sticky pulp – processed or natural – is an excellent palliative and emollient medicinal against skin conditions, digestive diseases, eye problems, joint and muscle pain, even blood circulation.¹ The remedial qualities of aloe were well-known even in Antiquity, as many pharmacological and medical treatises of certain Greek, Roman, and Byzantine authors testify.²

The papyrus and ostraca editions are cited after the official abbreviations of the *Checklist of edition of Greek, Latin, Demotic and Coptic papyri, ostraca and tablets* (<http://papyri.info/docs/checklist>). Other abbreviations used: *GMP* = I. Andorlini, *Greek Medical Papyri*, I-II, Firenze 2001, 2009. *CMG* = *Corpus Medicorum Graecorum*, I-XI 2,1, Leipzig, Berlin 1908-2017 (<http://cmg.bbaw.de/epubl/online/editionen.html>)

¹ K. P. Sampath Kumar – D. Bhowmik, Chiranjib, Biswajit, “*Aloe vera*: A potential herb and its medicinal importance”, *Journal of Chemical and Pharmaceutical Research* 2 (2010) 21-29; M. Sánchez – E. González-Burgo – I. Iglesias – M. P. Gómez-Serranillos, “Pharmacological update properties of *Aloe Vera* and its major active constituents”, *Molecules* 25 (2020) 1-37 (Open access journal: www.mdpi.com/journal/molecules).

² Gal. *De simpl. med. temp. ac fac.* 6,1 (11,822 Kühn): Καὶ γὰρ εὐστόμαχόν ἐστι τὸ φάρμακον, εἴπερ τι καὶ ἄλλο, καὶ κόλπων κολλητικόν. Ἰάται δὲ τὰ δυσσεπούλωτα τῶν ἑλκῶν, καὶ μάλιστα τὰ καθ’ ἕδραν τε καὶ αἰδοῖον. Ὀφελεῖ δὲ καὶ τὰς φλεγμονὰς αὐτῶν ὕδατι διεθείσα καὶ κολλᾷ τραύματα κατὰ τὸν αὐτὸν τρόπον. Ἀρμόζει δὲ ὡσαύτως χρωμένῃ καὶ πρὸς τὰς ἐν στόματι καὶ ῥίσι καὶ ὀφθαλμοῖς φλεγμονάς; Cf. Paul. Aeg. *Epit.* 7,3 (*CMG IX* 2. 191 Heiberg); Aët. *Iatr.* 1,21 (*CMG VIII* 1. 35 Olivieri); Orib. *Coll. med.* 11,32 (*CMG VI* 1,2,85 Raeder); J. Scarborough, “Roman pharmacy and the eastern drug trade: Some problems illustrated by the example of aloe”, in J. Scarborough (ed.), *Pharmacy and drug lore in Antiquity: Greece, Rome, Byzantium*, Cornwall 2010, VIII, 135-43.

The already published papers about aloe in Antiquity are scanty and refer mainly to the literary sources. Moreover, even though some medical papyri relevant to aloe's use have been studied so far,³ the evidence which the papyrological sources provide about the aloe trade and medicine has not been sufficiently considered yet. With this paper I pursue to study the Greek medical and documentary papyri from Greco-Roman and Late Antique Egypt thoroughly. The information from the papyrological sources and the evidence of the literary medical treatises can lead one to come to more satisfactory conclusions about: (a) the supply, the processing, and the use of aloe in Antiquity, (b) its combination with other remedies for the production of more complex therapeutic mixtures, and (c) the diseases against which aloe was used during ancient times.⁴

The description of aloe's external appearance and pharmacological properties in the Greek and Latin literary sources⁵ leaves no room for doubt that the aloe species most used as a remedy in Antiquity was *aloe perryi*, growing on Socotra, an island in the Indian Ocean.⁶ However, according to Dioscorides,⁷ aloe also grew in North Africa and in the Arab peninsula, as well as in the maritime areas and islands of the eastern Mediterranean. The plant, already used as medical and aromatic substance in Pharaonic Egypt,⁸ must have been imported from the East through the Roman spice and drug trade routes in the 1st cent. B.C. – 1st cent. A.D.⁹ The absence of aloe from the *Hippocratic Corpus*

³ See V. Gazza, "Prescrizioni mediche nei papiri dell'Egitto greco-romano II", *Aegyptus* 36 (1956) 77 and D. Fausti, "Ricerche sul lessico botanico dei papiri medici", in I. Andorlini (ed.), "*Specimina*" per il *Corpus dei papiri greci di medicina. Atti dell'incontro di studio*, Firenze 1997, 100.

⁴ The information provided by the papyrological sources does not refer only to Egypt; it is representative of the Greco-Roman and Late Antique world in general. Cf. P. van Minnen, "The century of Papyrology (1892-1992)", *BASP* 30 (1993) 5-18.

⁵ E.g. Dsc. *Mat. med.* 3,22,1-3 (2,28-9 Wellmann); Plin. *Nat.* 27,14 (7, 397-401 Jones).

⁶ J. A. C. Greppin, "The various aloes in ancient times", *JIES* 16 (1988) 33-42; Scarborough (above n. 1) 138.

⁷ Dsc. *Mat. med.* 3,22,1-2 (2,28-29 Wellmann): Γίνεται δὲ ἐν τῇ Ἰνδία πλείστη ... φέεται δὲ καὶ ἐν Ἀραβία καὶ Ἀσία καὶ τισὶ παραθαλασσίσις τόποις καὶ νήσοις ὡς ἐν Ἄνδρω.

⁸ Aloe is mentioned in the *Papyrus Ebers* (1500 B.C.). C. P. Bryan, *The Papyrus Ebers*, London 1930, 25-26, 62, 164.

⁹ On the Roman drug and spice trade in the Indian Ocean see E. H. Warmington, *The commerce between the Roman Empire and India*, Cambridge 1974, 202; V. Nutton, "The drug trade in antiquity",

and Aristotle's and Theophrastus' botanic treatises supports this assumption.¹⁰

In the papyrological sources, one finds hints about the origins of aloe; the papyri attest that aloe's supply proceeded through the import trade between the East and the eastern Egyptian trade stations. According to the private letter *PSI XV 1558* (3rd cent. A.D.), two *mnae* of aloe hepatitis (l. 12: ἀλόης ήπατίτιδος)¹¹ are listed among some other perfume species (e.g. κρόκον, μαλάβαθρον, σμύρνην, ρήτινην, ἄμωμον)¹², which the recipient of the letter was to receive from Coptos, one of the most important trade stations in Egypt.¹³ He should also deliver them –apparently via the Nile river– to the wife of a certain Spartas.

The account *PSI XII 1264* (4th cent. A.D.) offers evidence concerning the handling of aloe and other aroma-pharmaceutical substances (e.g. μαλάβαθρον, νάρδον, σμύρνη, κόστος) in Egypt; according to the text, two liters and six ounces of aloe (l. 18) were to be transported from Thebaid to Alexandria via the Nile (ll. 1-2: ἐπαρχίας Θηβαΐδος | παρεδ() ἐπὶ τῆς Ἀλεξανδρείας). The goods go through an agent in charge of the perfume handling (l. 11: Παλλαδίου ὑποδέκ(του) ἀρωματικῶν). The diffusion of aloe in Egypt seems to have been very extensive; the account of medical ingredients *O. Trim. II 826* (350-370 A.D.), l. 1: ἀλόης (οὐγκία) α τάλ(αντα) Αχ, from Trimithis, is a very precious attestation of the diffusion of the substance in the Western Desert.

Journal of the Royal Society of Medicine 78 (1985) 141; L. Casson, *The periplus Maris Erythraei. Text with Introduction, Translation, and Commentary*, Princeton 1989, 164-65; A. d'Hautcourt, "Les Romains et le commerce des aromates dans l'océan Indien", in L. Bodiou et al. (eds.), *Parfums et odeurs dans l'Antiquité*, Rennes 2008, 317-22; M. A. Cobb (ed.), *The Indian Ocean trade in Antiquity: Political, cultural and economic impacts*, London 2019.

¹⁰ Scarborough (above n. 1) 138, 140.

¹¹ That is, aloe that produces red-coloured juice. Cf. *Dsc. Mat. med.* 3,22,2 (2,28 Wellmann): Δισσὸν δέ ἐστι τοῦ χυλίσματος τὸ εἶδος· τὸ μὲν τι ψαμμῶδες ... τὸ δέ ἐστιν ήπατίζον ... Ἐκλέγον δέ τὴν λυπαράν καὶ ἄλιθον, στίλβουσαν, ὑπόξανθον, εὐθρυπτον καὶ ήπατίζουσαν; *Plin. Nat.* 27,16 (7,398 Jones).

¹² For details concerning the use of aloe as perfume, see below.

¹³ See also I. Andorlini, "Il commercio del croco sulla via di Coptos", in L. Del Francia Barocas (ed.), *Antinoe cent'anni dopo. Catalogo della mostra: Firenze, Palazzo Medici Riccardi, 10 luglio - 1 novembre 1998*, Firenze 1998, 183 (= *BL XI*, 251); H. Cuvigny, "Coptos, plaque tournante du commerce érythréen, et les routes transdésertiques", in P. Ballet et al. (eds.), *Coptos. L'Égypte antique aux portes du désert. Lyon, Musée des Beaux-Arts 3 février - 7 mai 2000*, Lyon 2000, 172-73. Bibliography on the Coptos' trade post is offered by the editors, V. Bartoletti - G. Bastianini et al., *Papiri greci e latini. Pubblicazioni della Società italiana per la ricerca dei papiri greci e latini in Egitto. XV*, Firenze 2008, 350.

The reading *ἀλόης Κώης*, that the editors of the drug list *P. Genova* I 15 (= *SB X 10753*; 2nd cent. A.D.), l. 14 recommend, could support the recording of an aloe variety originating from the island of Cos.¹⁴ However, after looking at the image of the papyrus on the back of the volume (tav. X), one could support that *Κώης* is questionable, whereas the reading *καλῆς* could be a better option. Such reading could solve the issue of the unattested aloe variety from Cos in the medical literature, which even the editors admit.¹⁵

Aloe is listed among many other pharmaceutical substances in the pharmacist's list *P. Michael*. 36 (4th-7th cent.), fr. B, l. 3. Unfortunately, the concise nature of the document does not allow us to determine neither the origins nor the use of the substance. The only information with which the papyrus provides us is the high price of aloe: about 2.000.000 *myriads* per ounce (*ἀλόης (οὐγκία) γ (ἥμισυ) (τέταρτον) μυ(ριάδες) ψ*). Aloe is the most expensive substance on the list, but it is not clear whether the high price is a matter of the difficulty of aloe's supply and diffusion or the result of inflation.

The majority of the papyrus texts refer to aloe as a medical substance. The plant is listed in the medical papyri as one of the main ingredients for eye-salves against ophthalmic conditions.¹⁶ The soft texture and the gentle palliative power of its juice made aloe an excellent medicament against conditions that affected one of the most important and sensitive parts of the human body. Aloe, therefore, is the dominant ingredient for eye-salves, as many papyrus *receptaria* confirm: *PSI X 1180* (2nd cent. A.D., Tebtynis), fr. B, c. II, l. 10: *ἀλόης (δραχμή) α*, *SB XVIII 13310* (= *P. Haun*. III 47, 2nd cent. A.D.), l. 9: *ἀλό[ης]*, *SB XVI 13045* (2nd-3rd cent. A.D.), l. 11: *ἀλόης (δραχμή) α*, *GMP I 14* (= *P.Sijp*. 6, 5th cent.), l. 5: *ἀλόης (δραχμή) α*, and the ostracon *O. Bodl.* II 2188 (4th cent.), *verso*, l. 9: *ἀλόη[ς]*, a remedy probably against leucoma (corneal opacity) and staphyloma (cf. ll. 3-4: [. .] *λευκῶ* [. .] [± ?] | [σ]ταφυλω[± ?]).

The conciseness and sententious nature of the medical prescriptions, as well as the damage of the written material, do not allow us to determine the ways aloe was used in the aforementioned *receptaria*. Judging from the information

¹⁴ Cf. the aforementioned testimony of Dioscorides (above n. 7) about the existence of the plant on the island areas of the Aegean.

¹⁵ M. Amelotti - L. Migliardi Zingale, *Papiri dell'Università di Genova (P.Genova)*, Genova 1974, 38 (n. on l. 4).

¹⁶ E.g. *Dsc. Mat. med.* 3,22,5 (2,30 Wellmann); *Plin. Nat.* 27,18 (7,400 Jones).

provided in the literary sources, one could conclude that the writers of the papyri and ostraca refer to the juice or the melted flesh of the aloe leaves, mixed with the other ingredients of the medical blends. During the blending, the viscid and gelatinous texture of the juice gave the mixture its appropriate moisture, while it blended the ingredients together. Such conjugation was necessary chiefly when the mixture did not consist only of plants (e.g. ὄπιον, σμύρνη, καστόριον, ἀκακία, νάρδος, κρίκος, etc.),¹⁷ but also minerals, such as καδμεία (calamine, a zinc oxide)¹⁸ and χαλκός κεκαυμένος (burnt copper).¹⁹

We should also refer to the Greek magical papyrus *Suppl. Mag.* II 94 (5th cent., Antinoopolis), in which one can find thirteen iatromagical prescriptions for various treatments.²⁰ In the second recipe, a formula of dry powder promoting sharpness of sight (l. 4: ξηρίον ὄξυδορκικόν), 2 drachmas of aloe are registered (l. 5). Aloe was to be melted and mixed with other ingredients as the brief directional phrase λιώσας χρω̄ (l. 6) implies.

The therapeutic effectiveness of aloe was not exploited only for eye-treatment. The sands of Egypt preserved papyrus texts, the writers of which listed aloe in prescriptions for plasters.²¹ The recipe for stomach plasters *SB XXVIII 17139* (3rd cent. A.D., Lykopolis), l. 1: Σκευ[ῆ στομαχ]ικοῦ ἐπιθέματος (*leg. ἐπιθέματος*) τονωτικοῦ, sheds light on the utilisation of aloe in medical ointments.²² After recording the ingredients (ἀλόη, λάδανον, στύραξ, οἰνάνθη,

¹⁷ On these ingredients see e.g. *GMP* I 14; *GMP* II 4 (2nd cent. A.D., Theadelphia); *GMP* II 5 (2nd cent. A.D., Tebtynis).

¹⁸ On καδμεία in the medical papyri see I. Andorlini, "Ricette mediche nei papiri: analisi di ingredienti", in N. Reggiani (ed.), *Isabella Andorlini, πολλά ἰατρῶν ἐστί συγγράμματα. I: Scritti sui papiri e la medicina antica*, Firenze 2017, 40-4.

¹⁹ On the use of κεκαυμένος χαλκός in eye-salves see e.g. *PSI* X 1180, fr. B, c. II, l. 7; *GMP* I 13 (2nd cent. A.D., Arsinoite Nome); ll. 1-2; *GMP* II 5, *passim*; *GMP* II 7 (4th-5th cent.), l. 4.

²⁰ For the nature and the contextual interpretations of the iatromagical formularies in the papyri see M. de Haro Sanchez, "Between magic and medicine: The iatromagical formularies and medical receptaries on papyri compared", *ZPE* 195 (2015) 179-89.

²¹ For the use of aloe in the plaster production see Orib. *Syn.* 9,17,11 (*CMG* VI.3, 287 Raeder): αἰμορροΐδας δὲ πλεοναζούσας ἐφίστησιν ἀλόη καταπλασθεΐσα.

²² For the treatment of stomach conditions using aloe cf. *Dsc. Mat. med.* 3,22,3 (2,29 Wellmann): δύναμιν δ' ἔχει στυπτικὴν, ξηραντικὴν, [ύπνωτικὴν] πυκνωτικὴν τῶν σωμάτων κοιλίας τε λυτικὴν καὶ στομάχου ἀποκαθαρτικὴν; *Gal. De comp. med. sec. loc.* 8,2 (13,131 Kühn): ἡ ἀλόη ... τῶν χολωδῶν τῶν ἐν τῇ γαστρὶ διαθέσεων ἄριστόν ἐστι φάρμακον. On the plasters used for the stomach healing

μαστίχη, ἀψίνθιον, φοίνικες) and their dosage (ll. 2-8), the preparation directions follow (ll. 9-13): the maker grates the aloe and the mastic and sprinkles the rest of the ingredients soaked in wine a day in advance. The blend becomes a plaster when some nard or quince oil is added (l. 14: καὶ γίνεται ἐνπλαστῶδες; *leg.* ἐμπλαστρῶδες). The same text sheds light on the processing of aloe; the expression τρίβεις καὶ ἐπιπάσις (*leg.* ἐπιπάσσεις) | τὰ ξηρά (ll. 11-12) proves that aloe must have been used dried, a form encountered in the aforementioned prescription for ξηρίον ὀξυδορκικόν, *Suppl. Mag.* II 94, l. 4, and in ancient medical treatises.²³

The mutilated plaster prescription *GMP* I 11 (= *P. Giss. Univ.* IV 45; 1st cent. B.C.)²⁴ refers to aloe being added to a boiling mixture that consists of wax, litharge, and oil. According to the remaining lines of the papyrus text, the mixture was to be boiled until it became thick (l. 15: ὅταν συστρέφηται). After the addition of κηρός and ἀλόη, it was removed from the fire (ll. 15-16: κηρὸ[ν | τὴν ἀλόην, ἄρας ἀπὸ τοῦ πυρός]) and left to restore itself. Since the boiling of the very sensitive aloe leaves could damage the texture of the plant tissue and consequently its therapeutic qualities, aloe must have been added to the hot mixture immediately after it reached its boiling point, if not after its removal from fire; however, the text does not confirm such interpretation.²⁵

The second therapeutic formulation of *MPER* NS XIII 10, 10-21 (5th cent.), that contained aloe, must refer to a remedy administered in liquid form, being either a liquid ointment or – less probable – a drinkable remedy, against abdominal disorders.²⁶ Such interpretation is supported by the term ἱκμάς (ll. 10-11: μαλακὴ ἱκ[μάς πρὸς] | κυλίας; *leg.* κοιλίας), used to describe the wetness of the mixture. In case the remedy was consumed as a potion, the sour taste of

see the notes of the first editor of *SB* XXVIII 17139, J.-L. Fournet, “Un papyrus médical byzantin de l’Académie des Inscriptions et Belles-Lettres”, *T&M* 12 (1994) 310.

²³ Cf. Orib. *Syn.* 7,1,10 (*CMG* VI.3, 212 Raeder): ἀλόην ξηρανθείσαν; *Ibid.* 9,34,2 (*CMG* VI.3, 298 Raeder): ἡ ἀλόη φάρμακον ἀγαθὸν ἐπιπαττομένη ξηρὰ χνοώδης; Alex. *Therap.* 7, 6 (2,279 Puschmann): ἀλόης ἡπατίτιδος πεπλυμένης καὶ ξηρανθείσης.

²⁴ See I. Andorlini, *Greek Medical Papyri*, I, Firenze 2001, 121.

²⁵ Andorlini (above n. 24) 128 (n. on ll. 15-16). Cf. Gal. *De comp. med. per gen.* 2,9 (13,510 Kühn): ἐὰν ἦτοι λιβανωτὸν ἢ συμύρναν ἢ ἀλόην λαμβάνη, ταῦτα γὰρ, ὅταν αἴρηται τὸ φάρμακον ἀπὸ τοῦ πυρός, ἐπεμβάλλεσθαι χρὴ μὴ φέροντα τὰς ἐψήσεις.

²⁶ H. Harrauer – P. J. Sijpesteijn, *Medizinische Rezepte und Verwandtes* (*MPER* XIII), Wien 1981, 26.

aloe was likely covered by the softer taste of some other ingredients, such as μαστίχη, ρόδα, οἶνος or μέλι.

The fragmentary nature of some medical papyri makes it difficult to determine the nature of the text in which aloe occurs and consequently the use and therapeutic contribution of the plant. An example of such difficulty is fr. 2 of *P. Ant.* III 128 (5th cent., Antinoopolis), probably an extract from an unidentifiable ancient medical treatise.²⁷ The registration of aloe in fr. 2, *verso*, l. 13, in combination with the reference to rheumatic conditions of the stomach (l. 8: κοιλίας ρευματικαῖ[ς]) and an ointment (ll. 18-19: κηρω[τή]), imply that the fragment refers to the treatment of the abdominal area with cataplasms. This assumption is also supported by the same use of aloe in the aforementioned recipe for stomach plasters *SB XXVIII 17139*, l. 1: Σκευ[ή στομαχ]ικῶ ἐπιθέματος (*leg. ἐπιθέματος*) τονωτικῶ.

Not easy to interpret is the use of aloe and the other ingredients mentioned in the first prescription of *MPER NS XIII 10*, 1-7 (5th cent.). The recording of κρόκος (l. 5: κρόκου [± ?]), a substance usually found in eye-salves, may imply that the remedy was used for eye conditions; however, the inclusion of mastic (l. 7: μαστίχης (οὐγκία) [± ?]) in the medical blend weakens this hypothesis.

The inclusion of aloe in the collection of medical prescriptions *P. Mich.* XVII 758 (4th cent. A.D.) is not certain due to the fragmentariness of the papyrus codex. We are not sure whether the writer of the recipe against lichens, in the *folio D, recto* of the papyrus codex, had recorded ἀλόη or ἄλς ἄμμωνιακόν (l. 13: ἀλ[]). The issue has not been resolved after the examination of literary parallels, in which either salt or aloe was used in similar prescriptions.²⁸

Similarly, very uncertain is the recording of aloe in *SB XXVIII 17142* (= *P. Iand.* V 86; 3rd-2nd cent. B.C.), l. 1: ἀλ. . [± ?]. Contrary to the first editor, who had interpreted the text as a veterinary recipe, Giuseppina Azzarello has suggested that the papyrus fragment probably contains a food shopping list with

²⁷ The text is not related to Περὶ βοηθημάτων of Antyllos (2nd cent. A.D.) mentioned in fr. 1 of the same papyrus. M. Witt, "Ein medizinischer Papyrus mit Kolummentitel? Bemerkungen zu einem Exzerpt aus Antyllos' περὶ βοηθημάτων im Antinoopolis-Papyrus III 128", *APF* 61 (2015) 53-73. See also the discussion by F. Corazza in her PhD thesis *The Antinoopolis medical papyri: A case study in Late Antique medicine*, Berlin 2016, 28-45.

²⁸ L. C. Youtie, *Michigan Papyri XVII: The Michigan Medical Codex (P. Mich. 758 = P. Mich. inv. 21)*, Atlanta 1996, 31 (n. on ll. 13-14).

the proper amounts required.²⁹ This is the reason why ἀλόη would be a possible –though unlikely enough– supplement for l. 1.

The damage of the papyrus sheet, on which the list of herbal substances SB XX 14501 (= BKT IX 76; 6th cent.) is preserved, does not allow us to determine the exact use of the recipe. The inclusion of aloe (c. II, l. 3: ἀλώα; *leg.* ἀλόη), λιθάργυρος (l. 2), ναρδόσταχυς (l. 7), and κρόκος (l. 10) makes the ophthalmic use of the formula possible. However, the recording of other, aromatic herbs, such as σάνδανον, στύραξ, ἄμωμον,³⁰ makes it possible that the papyrus contains a collection of aromatic recipes. The use of aloe in perfume formulas is also known from the restraining rite for anything PGM VII 429–449, in which aloe (l. 435) is included among other ἀρώματα φαιά (myrrh, bdellium, styrax and thyme). Let us also mention the use of aloe resin as perfume “to make pleasant the smell of the house or of the clothes”, according to the *Papyrus Ebers*.³¹ Although the use of aloe in perfume recipes was common in Antiquity,³² it is quite strange, for aloe is not a fragrant plant. However, the moist and soft texture and the emollient effect of aloe made it appropriate for the production of aromatic ointments or other cosmetic blends which included more fragrant substances.

The main conclusions of this paper could be summarised briefly in the following points:

(a) *The supply of aloe.* Papyri from Greco-Roman and Late Antique Egypt confirm the information provided by Dioscorides concerning the origins of aloe from the East. Papyrus documents, such as the letter PSI XV 1588 and the

²⁹ G. Azzarello, “P.Iand. V 86: papiro veterinario o culinario?”, in I. Andorlini (ed.), *Testi medici su papiro. Atti del Seminario di Studio. Progetto Corpus dei papiri greci di medicina* (Firenze, 3–4 giugno 2002), Firenze 2004, 251–56.

³⁰ For the recording of these substances in other lists of aromata see e.g. *P. Coll. Youtie* II 86 (3rd–4th cent. A.D.), ll. 1–5: ἀμώμο[υ] λι(τρα) β | κόστου λι(τρα) α | στύρακος λι(τρα) α δ´ | μαστίχη<ς> λι(τρα) α δ´, and the declarations of herb prices by the perfume dealers of Oxyrhynchus *P. Oxy.* LIV 3731 (ca. 310–311 A.D.) and 3733 (25 May 312 A.D.), in which στύραξ, κόστον, μαστίχη and ἄμωμον are recorded.

³¹ Bryan (above n. 8) 164.

³² M. Saiko, *Cura dabit faciem. Kosmetik im Altertum. Literarische, kulturhistorische und medizinische Aspekte* (BAC 66), Trier 2005, 133; A. Lallemand, “Vocabulaire des parfums”, in A. Verbanck-Piérard – N. Massar – D. Frère (eds.), *Parfums de l'Antiquité. La rose et l'encens en Méditerranée*, Mariemont 2008, 51; D'Hautcourt (above n. 9) 318. Cf. also the aforementioned PSI XV 1558 (3rd cent. A.D.) and PSI XII 1264 (4th cent. A.D.), which refer to the import trade of aloe and other aromatic herbs.

account *PSI XII 1264*, provide evidence for the import trade of the therapeutic and aromatic plant via the trade stations of Egypt, and its shipping and handling to the inland area through the river. *O. Trim.* II 826 reveals much about the expansion of the use of aloe even in the Western Desert.

(b) *The processing and usage of therapeutic aloe.* The Greek medical papyri offer information about the processing, the form and the ways to use aloe in Antiquity. Again the papyrological evidence is in concordance with the evidence provided by the medical literature. For the preparation of the remedies, the juice or the melted flesh of the leaves was used. Often the pharmacists used aloe in a dried form (cf. the dry powder eye-salves), while the plaster prescription *GMP I 11* implies that the plant could be added in a hot mixture. In the majority of the medical prescriptions on papyrus, ostraca and parchment, aloe was part of the remedies used for external use only (eye-salves, ointments or plasters), while in *MPER NS XIII 10, 10-21* aloe's inclusion in a drinkable remedy is possible. According to most of the papyri, aloe was combined with other medical substances, either herbals or minerals, creating more complex and consequently more effective medical blends.

(c) *The conditions in which aloe was used.* The medical papyri confirm the information derived from the ancient medical treatises concerning the health problems to which aloe was administered. The variety of conditions that aloe could be used as a remedy is widespread indeed. The Greek papyrological sources reveal that the doctors and pharmacologists in Egypt took advantage of aloe's emollient power and used it for the treatment of skin conditions, such as irritation and itchiness, digestive disorders (illnesses of the abdominal area, rheumatic stomach), and eye-conditions.³³ The aforementioned aloe's beneficial effects are still being exploited by the contemporary medical and pharmaceutical science against a wide range of health problems, not much different from those that afflicted the people in Antiquity.

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³³ The fragmentary nature of the papyri that contain ophthalmic remedies makes it difficult to determine the eye-conditions for which aloe could be used, except from leucoma and staphyloma, mentioned in *O. Bodl.* II 2188. However, the great number of the ocular *receptaria*, in which aloe occurs, allows us to support that the plant was used against a wide range of eye problems.

Appendix: List of the Greek papyrological witnesses of aloe

No.	Text	Date	Context
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Greek documentary papyri and ostraca

1	PSI XV 1558	3 rd A.D.	Letter that includes list of imported perfumes
2	PSI XII 1264	4 th A.D.	Account of aroma-pharmaceutical substances
3	<i>O. Trim.</i> II 826	350-370 A.D.	Account of medical ingredients
4	<i>P. Genova</i> I 15	2 nd A.D.	List of drugs
5	<i>P. Michael.</i> 36	4 th -7 th	Pharmacist's list

Greek medical papyri and ostraca

6	PSI X 1180	2 nd A.D.	Ophthalmic <i>receptarium</i>
7	SB XVIII 13310	2 nd A.D.	Eye-salve for unknown condition
8	SB XVI 13045	2 nd -3 rd A.D.	Eye-salve for unknown condition
9	GMP I 14	5 th	Eye-salve for unknown condition
10	<i>O. Bodl.</i> III 2188	4 th A.D.	Eye-salve for leucoma and staphyloma
11	<i>Suppl. Mag.</i> II 94	5 th	Ἐηρόν for sharpness of sight
12	SB XXVIII 17139	3 rd A.D.	Ointment for stomach diseases
13	GMP I 11	1 st B.C.	Boiling ointment
14	MPER NS XIII 10, ll. 10-21	5 th	Liquid ointment (or potion) for abdominal disorders
15	<i>P. Ant.</i> III 128	5 th	Ointment for rheumatic stomach
16	MPER NS XIII 10, ll. 1-7	5 th	Eye-salve (?)

17	<i>P. Mich.</i> XVII 785	4 th	Recipe for lichens (aloe's recording uncertain)
18	<i>SB</i> XXVIII 17142	3 rd -2 nd B.C.	List of goods (prob. not medical). Aloe's recording uncertain
19	<i>SB</i> XX 14501	6 th	Eye-salve or perfume

Greek magical papyri

20	<i>PGM</i> VII 429-449	3 rd A.D.	Aloe in perfume formula in restraining rite for everything
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