

HERBAL MEDICINE

BOTANΟΛΟΓΙΚΗ ΘΕΡΑΠΕΙΑ

Urinary bladder lithiasis treatment in the “Mega Dynameron”

OBJECTIVE: The *Mega Dynameron*, probably written in the 13th century by Nikolaos Myrepsos, included all up-to-then knowledge of Pharmacology. It consists of 24 sections, following the 24 letters of the Greek alphabet, and includes more than 2,600 pharmaceutical recipes. The *Mega Dynameron* was used as the reference book on drugs in Europe for about three centuries after its publication. Our study aimed to focus on recipes for nephrolithiasis, especially urinary bladder lithiasis. **METHOD:** For the purpose of this study, we read the Latin translation of “*Mega Dynameron*”, published by Leonhart Fuchs in Basel in 1549, available online at the Biblioteca Digital Dioscórides of Universidad Complutense of Madrid, as well as the Greek publication by Elias Valiakos (2014 and 2019), based on Paris code gr.2243. **RESULTS:** Myrepsos refers to renal diseases in many recipes in his work. Most of them are intended for use in non-renal pathologies as well, and only a part of them is specifically for renal and urinary bladder lithiasis. “Antidotarium” in section “alpha” includes eight recipes referring specifically to dissolving bladder stones. Two of them concern exclusively urinary bladder lithiasis (ν'/LI and $\nu\beta'/\text{LIII}$), while $\mu\alpha'/\text{XLII}$ and $\rho\gamma\alpha'/\text{CXCIII}$ are used for both renal and bladder stones. The other four (β'/II , $\lambda\theta'/\text{XL}$, $\pi\eta'/\text{XC}$ and $\tau\iota\delta'/\text{CCCXX}$) are indicated for other diseases as well. Recipes include a rich variety of herbs, plants, vegetables and fruits, insects (e.g. cicada) and animal products (e.g. goat’s blood), with detailed preparation instructions. Ingredients are mixed with honey, sugar, water, wine or chamomile, and administered with specific doses and duration of treatment. More recipes for renal inflammation, lithiasis and colics in *Dynameron* are found in the sections on ointments, patches, enemas, cathartics and others, while a couple of specific recipes for urinary bladder stones are referred in Index Salium/«Περὶ Αλάτων» (η'/VIII) and Index Lexopyretorum/ «περὶ Ληξοπυρέτων» ($\kappa\gamma'/\text{XXIII}$). **CONCLUSIONS:** With his reference book on drugs “*Mega Dynameron*”, Nikolaos Myrepsos disseminated invaluable knowledge on the treatment of urolithiasis throughout the centuries, highlighting the importance of kidney function and uropathies.

1. INTRODUCTION

The *Mega Dynameron* («Μέγα Δυναμερόν ἡ Περὶ συνθέσεως φαρμάκων»), originally written in Greek, includes over 2,600 pharmaceutical recipes. It is divided in 24 sections, following the 24 letters of the Greek alphabet. Its author was probably Nikolaos Myrepsos [“Myrepsos” meaning a person making myrrh or perfumes] who lived during the 13th century AD and was personal doctor to the Emperor Ioannis Vatatzis of Nicaea.¹⁻⁵ However, according to recent research (Valiakos 2019),⁶ the initial core text of *Dynameron* might have been the work of a medical doctor named Nikolaos who lived during the early 12th century

(or even earlier), which was enhanced in the following decades by different writers adding more recipes to the initial text, until the second half of the 13th century, when *Dynameron* was published as presently known in the text of Paris code gr.2243 (fig. 1).

Paris code gr.2243 is located in the National Library of France in Paris (BnF).⁵ Its writing was completed in August 1339 in Athens, as noted in page 664r, by Kosmas Kamilos, priest and exarch of the Patriarchate in Athens, on behalf of Dr Dimitrios Chlomos. It includes a copy of Nikolaos Myrepsos’ “*Dynameron*” between pages 002v and 550v, as well as more medical literature. In page 1v of the code, it

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A. Ptinopoulou,¹

N. Tsiampalis,²

M. Rigkos³

¹Renal Unit, General Hospital of Trikala, Trikala

²Department of Nursing, Technological Educational Institute of Thessaly, Larissa

³Independent Researcher, Historian – Medical Doctor, Larissa

Θεραπεία λιθίασης ουροδόχου κύστης στο «Μέγα Δυναμερόν»

Περίληψη στο τέλος του άρθρου

Key words

Bladder lithiasis

Dynameron

Nikolaos Myrepsos

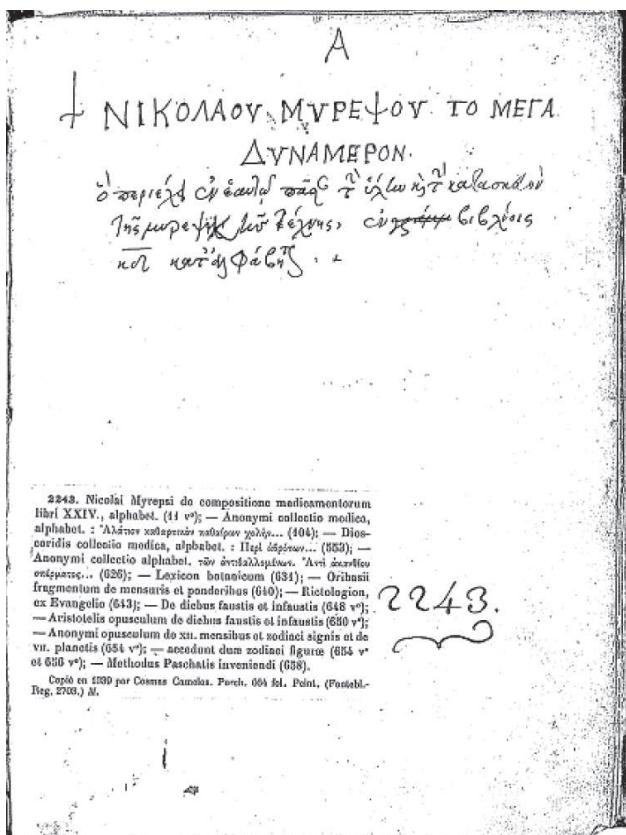


Figure 1. Paris code gr.2243, Nikolaos Myrepssos' *Mega Dynameron*.

is noted that Antonios Eparchos obtained this code, and, circa 1540, he sold it or donated it to the king of France Francis I, who in turn, donated it to the National Library of France in Paris, where it is still found.

The *Dynameron* became very well-known from its Latin translation, published by Leonhard Fuchs, professor of Medicine and Botanologist at the University of Tübingen, in 1549, and was titled "Medicamentorum Opus, Nicolai Myrepsi Alexandrini"⁷ (fig. 2). The source text that Fuchs used seems to have been very close to the Paris Greek code gr.2243.⁵ The available codices clearly show that *Dynameron* was used as a reference book on drugs for a very long time.^{5,6} From its Latin translation, we see that this text was of great importance and influenced later western pharmaceutical textbooks (Cordo (1546), Enchiridion (1564), Dispensatorium (1565)).^{6,10} It has been the reference book on drugs in Europe for two to three centuries after its publication.

In the *Dynameron*, Nikolaos Myrepssos recorded all up-to-then pharmaceutical knowledge. Based on older Greek, Latin and Arabic pharmaceutical textbooks and collections, he was influenced by his predecessor doctors or pharmacists, like Oribasius and Alexander of Tralles, as well as by the Antidotarium (magnus) of Nicholas from the

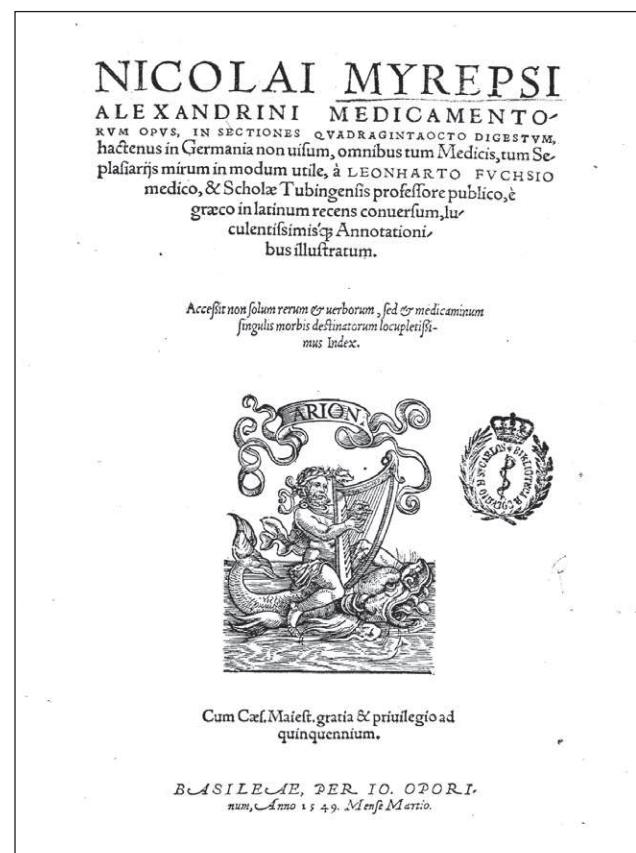


Figure 2. Nicolai Myrepsi Alexandrini Medicamentorum opus, by Fuchs Leonarht, Basileae, 1549.

Salerno Medical School.⁶ The recipes include a great variety of ingredients, like plants, stones, animal or insect products. They are intended to treat all kind of diseases of the body.⁸

Many recipes in the *Mega Dynameron* concern renal and urinary bladder diseases in general. Some of these concern nephrolithiasis, urolithiasis and urinary bladder lithiasis. For the present study, we focused on recipes that clearly referred to the treatment of urinary bladder stones. This of course does not mean that other recipes concerning renal pathologies and nephrolithiasis or bladder inflammation in general could not have been effective for bladder lithiasis as well.

2. MATERIAL AND METHODS

We read the Latin translation of "Mega Dynameron" published by Leonhart Fuchs in Basel in 1549, available online at the Biblioteca Digital Dioscórides of Universidad Complutense of Madrid.⁷ We also read the Greek publication of Paris code gr.2243, written in the 14th century and only recently edited and published for the first time in the original Greek language (Valiakos 2019).⁶

Through our study, we found that Nikolaos Myrepssos refers to

renal diseases in a substantial number of recipes in his work. From these, we separated recipes concerning urinary bladder stones (λίθοι κύστεως, vesica lapides/calculos). The recipes are intended for use in non-renal pathologies as well, and only a part of them are specifically for renal and urinary bladder lithiasis. In the following text, the recipe numbers are stated with Greek letters for the Paris code gr.2243, and with Latin numbers for the Fuchs (1549) edition.

3. RESULTS

"Antidotarium" or "About the Antidotes", in section alpha, includes about 90 recipes concerning renal diseases. From these, fewer than 40 recipes refer to urolithiasis (tab. 1) and only eight of them specifically to urine bladder stone treatment (tab. 2). Two of them are exclusively used for bladder lithiasis treatment (v'/LI and vβ'/LIII), while recipes μα'/XLII and ρ̄α'/CXCIII are used both for renal and bladder stones. The other four recipes (β'/II, λθ'/XL, πη'/XC and τιδ'/CCCXX) concern bladder stones, but they are also indicated for other diseases, like pulmonary, cardiac and gastrointestinal. The plants referred in the recipes were widespread in the Byzantine territory and were found throughout the eastern Mediterranean.

Interestingly, recipe number v'/LI from Antidotarium is noted to have been used for the treatment of emperor Vespasianos, who lived in the 1st century AD. It includes nardos syriaci, hyssop and petroselini and is administered

with water. «Νάρδος» or «ναρδοστάχην» or spikenard, is a flower plant of the Valerian family.^{3,9} Its oil has been used since ancient times in medicine. It has diuretic and spasmolytic properties and many other therapeutic effects, such as antifungal, antimicrobial and antioxidant. «Υσσωπός» or hyssop, considered a gentle stimulant, is used in medicines, tonics, and alcoholic liqueurs. It is used as a spice due to its distinctive minty flavour. It is effective in urinary problems and in pulmonary, digestive and uterine diseases. It has antimicrobial, antioxidant and expectorant properties. «Πετροσέλινο» or "petroselini", commonly known as parsley («μαϊντανός» in Greek), is used as a diuretic, but it is said to also be useful for kidney stones, dysuria, cystitis and renal diseases. It is thought to have many pharmacological effects, including antioxidant, antibacterial, antifungal, anti-inflammatory, antidiabetic and spasmolytic properties.^{3,9-11}

Recipe vβ'/LIII is described as another remarkable cure for bladder stones. Amongst other ingredients, it includes «κασία»/«casiae», «εύζωμο»/«eruca» and «σμύρνη»/«myrrhe» and is administered with honey. Casiae [scientific name: *Cinnamomum aromaticum* or *Cassia Cinnamomum*] is an aromatic bark, similar to cinnamon, but differing in aromatic strength and quality. It has diuretic, analgesic, antipyretic, antiseptic and anti-allergic properties. «Εύζωμος» or "eruca" is the commonly known wild rocket («ρόκα» in Greek). Eruca sativa seed extract is considered to have anti-inflammatory and diuretic effects. «Σμύρνη» or "myrrhe" refers to *Commiphora molmol* or *Commiphora myrrha* and it has antiseptic, anti-inflammatory, antispasmodic and analgesic effects.^{3,9-11}

Recipe μα'/XLII interestingly features the use of goat's blood and cicada, including detailed instructions for obtaining and processing them. It is suggested for renal diseases and people who suffer from stones and stranguria. It is also reported to be useful in dissolving bladder stones when used in hot baths («εν βαλανείῳ»). It is administered with honey and sugar. This recipe also refers to «άκορον» that is *Acorus calamus* or *Calamus aromaticus*, which has diuretic, spasmolytic, anti-inflammatory and analgesic properties. It also includes «Δαύκο κρητικό»/«daucus creticus», which is the commonly known carrot. It seems that carrots were very often used in kidney recipes and have an anti-oxidant effect.⁹⁻¹¹

Recipe ρ̄α'/CXCIII was used with sugar, honey or a combination of honey and wine and includes amongst else iris and pepper. «Ιρίδα ιλλυρική» [scientific name: *Iris illyrica*] has antimicrobial, spasmolytic and anti-cancer properties. Pepper [«Πιπέρι λευκό, κοινό ή μακρύ» or «Piper nigrum, Piper album, Piper longum»] seems to have a diuretic and also a mild stimulant, antioxidant and anticancer effect.^{3,9-11}

Table 1. Recipes referring to urolithiasis (kidney and/or bladder stones) in Antidotarium.

α/I	v/LI	ξα/LXII	σκθ/CCXXXIII
β/II	να/LII	πη/XC	σμ/CCXLIV
στ/VI	νβ/LIII	ροθ/CLXXXI	τ/CCCVI
λθ/XL	νγ/LIV	ρπε/CLXXXVII	τιδ/CCCXX
μα/XLI	νδ/LV	ρπη/CXC	τλζ/CCCXLIV
μα/XLII	νε/LVI	ρπθ/CXCI	τμθ/CCCLVI
μδ/XLV	νστ/LVII	ρ̄α/CXCIII	τοα/CCCLXXVII
με/XLVI	νζ/LVIII	σκδ/CCXXVIII	τοζ/CCCLXXXIX
μστ/XLVI	νη/LIX	σκη/CCXXXII	υε/CDXI
μθ/L	ξ/LXI		

Table 2. Recipes referring to bladder stones in Antidotarium.

v/LI	β/II
νβ/LIII	λθ/XL
μα/XLII	πη/XC
ρ̄α/CXCIII	τιδ/CCCXX

More recipes in Antidotarium refer to bladder lithiasis, but are indicated for other diseases as well. Of note, a couple of them refer to historical persons, such as recipe number 2 (β'/II), which is titled "antidote of Hadrian" and refers to the Roman Emperor who lived in the second century AD. Amongst other ingredients, it includes white pepper, cinnamomum, crocus, carrot and amomum. Moreover, recipe $\pi\eta'/\text{XC}$ says that it was written by Peter the Apostle of the Lord for the health of all people and uses hyssop, iris, cinnamon and other ingredients.

Recipe $\lambda\theta'/\text{XL}$ is indicated for bladder lithotripsy and as a laxative. It includes parsley, black pepper, cinnamomum, nard, white pepper and others. Interestingly, recipe $\tau\iota\delta'/\text{CCCXX}$, indicated for kidney and bladder stone lithotripsy^{6,7} and for pulmonary and abdominal diseases, includes ingredients from deer and elephant, as well as gold, pearl and silk in addition to plant ingredients.

More recipes for renal and bladder inflammation, lithiasis and colics are found in the *Dynameron* in the sections on salts (περί Αλατίων, index Salium), ointments (περί Άλειμμάτων, index unguentorum), patches (περί Έμπλαστρών, index emplastrorum), enemas (περί Ένεμάτων, index enematum), cathartics (περί Καθαρτικῶν ύδραγών, index purgatoriorum), pills (περί Κοκκίων σκευασιών, index pilularum), pessaries (περί Πλεσσών, index pessorum), pastilles (περί Τροχίσκων, index pastillorum) and others.

Amongst these, a couple of recipes refer more specifically to urinary bladder stones. Recipe number 23 ($\kappa\gamma'/\text{XXIII}$) in Index Ilexopyretorum («περί Ληξοπυρέτων») is indicated only for bladder stone treatment and includes pepper (common and long) and parsley, which we found in other recipes for bladder stones as well. Another one, in Index Salium («Περί Αλάτων» – About Salts), number 8 (η'/VIII), which is indicated for other diseases as well, includes parsley, hyssop, and celtic nard.

4. CONCLUSIONS

The *Dynameron* was likely written in the 13th century by Nikolaos Myrepsos and was later extensively copied and translated, influencing western medicine and pharmacology for centuries.

A substantial number of recipes in the *Dynameron* refer to renal diseases and some of them are specific to bladder lithiasis. Recipes include a rich variety of herbs, plants, vegetables and fruits, insects and animal products, as well as non-organic ingredients, like salts and stones. They are enhanced with detailed preparation instructions. Ingredients are mixed with the appropriate excipients, like honey, sugar, water, wine or chamomile, and are administered with specific doses and durations of treatment.

With his reference book on drugs "Mega Dynameron", Nikolaos Myrepsos disseminated invaluable knowledge on the treatment of lithiasis throughout the centuries, highlighting the importance of kidney function and uropathies. His book is a treasure trove for studying the different medicinal plants and their possible uses for the treatment of renal and other diseases nowadays.

It is a plentiful source of exploration that could highlight new pathways in disease treatment. We should remember that these recipes represent a pharmaceutical compendium of an entire era, used for centuries before modern pharmacology was established. Thus, there is much to learn from this documented experience of previous, medieval, scientists.

ΠΕΡΙΛΗΨΗ

Θεραπεία λιθίασης ουροδόχου κύστης στο «Μέγα Δυναμερόν»

Α. ΠΤΗΝΟΠΟΥΛΟΥ,¹ Ν. ΤΣΙΑΜΠΑΛΗΣ,² Μ. ΡΗΓΚΟΣ³

¹Μονάδα Τεχνητού Νεφρού, Γενικό Νοσοκομείο Τρικάλων, Τρίκαλα, ²Τμήμα Νοσηλευτικής, Τεχνολογικό Εκπαιδευτικό Ίδρυμα Θεσσαλίας, Λάρισα, ³Ανεξάρτητος Ερευνητής, Ιστορικός – Ιατρός, Λάρισα

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ΣΚΟΠΟΣ: Το Μέγα Δυναμερόν γράφτηκε πιθανότατα κατά τη διάρκεια του 13ου αιώνα από τον Νικόλαο Μυρεψό. Αποτελείται από 24 ενότητες που ακολουθούν τα 24 γράμματα του Ελληνικού αλφαριθμητού και περιλαμβάνει περισσότερες από 2.600 φαρμακευτικές συνταγές. Το Δυναμερόν περιέχει κωδικοποιημένη τη γνώση στη Φαρμακολογία μέχρι την εποχή του. Αποτέλεσε το φαρμακευτικό βιβλίο αναφοράς στην Ευρώπη για περίπου τρεις αιώνες μετά τη δημοσίευσή του. Η παρούσα μελέτη είχε ως σκοπό να εστιάσει σε συνταγές για νεφρολιθιάσεις, και ειδικότερα για λιθιάσεις της ουροδόχου κύστης. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ:** Για τη μελέτη αυτή χρησιμοποιήθηκε η λατινική μετάφραση του

«Μέγα Δυναμερού», όπως εκδόθηκε από τον Leonhart Fuchs το 1549 στη Βασιλεία, η οποία είναι διαθέσιμη ηλεκτρονικά στην Ψηφιακή Βιβλιοθήκη Dioscórides του Πανεπιστημίου Complutense της Μαδρίτης, καθώς και την ελληνική έκδοση από τον Ηλία Βαλιάκο (2014 και 2019), που έχει βασιστεί στον κώδικα του Παρισιού gr.2243. **ΑΠΟΤΕΛΕΣΜΑΤΑ:** Το Δυναμερόν αναφέρεται σε νεφρικές παθήσεις σε ένα σημαντικό αριθμό συνταγών. Οι περισσότερες από αυτές προορίζονται για χρήση και σε μη νεφρολογικές παθήσεις, και μόνο ένα μέρος από αυτές είναι ειδικές για λιθιάσεις των νεφρών και της ουροδόχου κύστης. Το «Αντιδοτάριο» στην ενότητα «άλφα» περιλαμβάνει οκτώ συνταγές που αναφέρονται συγκεκριμένα στη διάλυση των κυστικών λίθων. Δύο από αυτές αφορούν αποκλειστικά τις κυστικές λιθιάσεις (ν'/LI and νβ'/LIII), ενώ η μα'/XLII και η ρ²α'/CXCIII χρησιμοποιούνται τόσο για λίθους νεφρών όσο και για λίθους ουροδόχου κύστης. Οι υπόλοιπες τέσσερις (β'/II, λθ'/XL, πτγ'/XC και τιδ'/CCCXX) ενδείκνυνται και για άλλες ασθένειες. Οι συνταγές περιλαμβάνουν μία πλούσια ποικιλία από βότανα, φυτά, λαχανικά και φρούτα, έντομα (π.χ. τζιτζίκια) και ζωικά προϊόντα (π.χ. αίμα τράγου), με αναλυτικές οδηγίες για την παρασκευή τους. Τα συστατικά αναμειγνύονταν με μέλι, ζάχαρη, νερό και κρασί ή χαμομήλι, και χορηγούνταν σε συγκεκριμένες δόσεις και διάρκεια θεραπείας. Περισσότερες συνταγές στο Δυναμερόν για τη φλεγμονή των νεφρών, τις λιθιάσεις και τους κωλικούς βρίσκουμε στις ενότητες για αλοιφές, επιθέματα, ενέματα, καθαρτικά, και άλλα, με ορισμένες πιο συγκεκριμένες συνταγές για τις κυστικές λιθιάσεις στο κεφάλαιο «περὶ Αλάτων»/«index Salium» (η'/VIII) και το «περὶ Ληξοπυρέτων»/«index Lexopyretorum» (κγ'/XXIII). **ΣΥΜΠΕΡΑΣΜΑΤΑ:** Ο Νικόλαος Μυρεψός με το φαρμακευτικό βιβλίο του «Μέγα Δυναμερόν» μεταλαμπάδευσε ανά τους αιώνες ανεκτίμητη γνώση για τη θεραπεία των ουρολιθιάσεων, τονίζοντας τη σημασία της νεφρικής λειτουργίας και των ουροπαθειών.

Λέξεις ευρετηρίου: Δυναμερόν, Λιθίαση ουροδόχου κύστης, Νικόλαος Μυρεψός

References

- KARAMPEROPOULOS D. Byzantine therapeutics. In: Vlahakis G, Nicolaidis E (eds) *Byzantium – Venice – Modern Hellenism: A wandering in the world of scientific thought*. Conference Proceedings, National Hellenic Research Foundation, Athens, 2004:91–100
- EFTICHIADIS A. *Introduction to Byzantine therapeutics*. Parisianos Publ, Athens, 1983:295–296
- DIAMANDOPOULOS A. *History of Greek Nephrology*. Papazisi Publ, Athens, 2000:382–389
- SKALTSAS E. *Istoria tis Pharmakeutikis*. [ebook] Hellenic Academic Libraries Link, Athens, 2015:118–119. Available at: <http://hdl.handle.net/11419/5095>
- VALIAKOS E. *I symvoli tou Nikolaou Myrepou stin proothisi kai tin tekmlhriosi tis votanologias kai tis pharmakeftikis stin ysteri vyzantini epochi* (translation: The contribution of Nicholas Myrepsos in promotion and documentation of botany and pharmacy in the late Byzantine era). National Documentation Center, 2014. Available at: <https://www.didaktorika.gr/eadd/handle/10442/42718>
- VALIAKOS E. *Das Dynameron des Nikolaos Myrepsos*. Erstedition. Propylaeum, Heidelberg, 2019. Available at: <https://books.ub.uni-heidelberg.de/propylaeum/catalog/book/455>
- FUCHS L. *Nicolai Myrepsi Alexandrini Medicamentorum opus*. Op-orinum, Basileae, 1549. Available at: http://dioscorides.ucm.es/proyecto_digitalizacion/index.php?b17844290
- VALIAKOS E. To *Dynameron tou Nikolaou Myrepou*. *Byzantia-ka* 2015, 32:241–255
- WILLIAMSON EM. *Potter's herbal cyclopaedia*. The C.W. Daniel Company Ltd, Saffron Walden, 2003
- VALIAKOS E, MARSELOS M, SAKELLARIDIS N, CONSTANTINIDIS T, SKALTSAS E. Ethnopharmacological approach to the herbal medicines of the “Antidotes” in Nikolaos Myrepsos’ *Dynameron*. *J Ethnopharmacol* 2015, 163:68–82
- VALIAKOS E, MARSELOS M, SAKELLARIDIS N, CONSTANTINIDIS T, SKALTSAS E. Ethnopharmacological approach to the herbal medicines of the “Elements Alpha to Delta” in Nikolaos Myrepsos’ *Dynameron*. Part II. *J Ethnopharmacol* 2017, 205:246–260

Corresponding author:

M. Rigkos

e-mail: manthos2@yahoo.com