

## HERBAL MEDICINE ΒΟΤΑΝΟΛΟΓΙΚΗ ΘΕΡΑΠΕΙΑ

# Nephrology in an Alexandrian manuscript of late antiquity

A medical manuscript with the title *Dynameron* is kept in the Marciana National Library of Venice (Cod. gr. Z. 295) and originates from a text initially written in Greek by a physician named Aelius Promotus, who lived and worked in Alexandria (1st to 2nd century AD). This manuscript should not be confused with the enormous *Mega Dynameron* of Nicolaos Myrepsos, with 2667 recipes, which was written in the 13th century. *Dynameron* of Aelius Promotus contains 130 chapters dealing with different diseases and their treatment, described in 870 recipes. In the cited 41 recipes related to ailments of the kidneys and the urinary bladder, are included almost 80 different herbs, 6 ingredients of animal origin, and also 1 mineral. The large number of ingredients used in each recipe implies that Aelius Promotus was a follower of the so called "Empiric school" of medicine, although in his work are easily recognizable also influences from other theoretical sects. Many of the herbal ingredients proposed by the author are known for their diuretic, spasmolytic, analgesic and antiseptic properties. Hence, they are suitable for treating nephrolithiasis, strangury, dysuria, hematuria, as well as inflammations of the kidneys and the urinary bladder. Some of the recipes refer to ingredients that cannot be granted any apparent therapeutic reasoning. Additionally, some treatments seem more like superstitious rituals. However, when *Dynameron* is evaluated as a whole, the conclusion is that Aelius Promotus was a competent practicing physician with great experience, typical of the famous medical tradition of Alexandria during the late Roman era. There is evidence that *Dynameron* was highly estimated and was copied several times thereafter, in order to serve as a therapeutic manual for the common ailments a physician might encounter in his everyday practice.

### 1. INTRODUCTION

In Hellenistic and Roman Alexandria, there was a remarkable progress in medicine and surgery, partly due to the pre-existing local healing practices and the anatomical knowledge gathered along time as a result of the embalmment of the dead.<sup>1,2</sup> Many archaeological findings show the existence of a variety of elaborate surgical instruments, made mainly of bronze.<sup>3</sup>

A physician who lived and worked in Alexandria is Aelius Promotus (second half of the 1st and first half of the 2nd century AD), who wrote a large treatise with the title *Dynameron*,<sup>4</sup> containing detailed recipes for the treatment of numerous diseases. A copy of this work, made in Sicily in the 15th century, is currently kept in the Marciana National Library of Venice (Cod. gr. Z. 295).<sup>5</sup> This manuscript has been made upon order of Basilios Bessarion (1403–1472), who

at that time acted as a Cardinal of the Catholic Church in Rome.<sup>6</sup>

The present article describes and discusses for the first time the parts of *Dynameron* referring to remedies and diseases related to the kidneys and the urinary bladder.

### 2. THE AUTHOR AND THE MANUSCRIPT

Little is known about Aelius Promotus and his life. The manuscript has the title *Dynameron by Aelius Promotus of Alexandria*, indicating that he lived in Alexandria and may have been also born in this city. Based on chronological clues, one can conclude that Aelius Promotus practiced medicine in the first half of the second century AD. In *Dynameron*, he acknowledges three other physicians, as his sources: Soranus (recipe 6, Chapter 3), Menemachus (recipe 1, Chapter 19) and Hermogenes (recipe 4, Chapter

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Οι νεφρολογικές παθήσεις  
σε ένα αλεξανδρινό κείμενο  
της ύστερης αρχαιότητας

Περίληψη στο τέλος του άρθρου

#### Key words

Aelius Promotus  
Alexandria  
*Dynameron*  
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63). At least Soranus of Ephesus, had lived and worked in Alexandria during the turn of the first to the second century.<sup>7</sup> The author mentions that one recipe for the treatment of respiratory diseases had been used by the troops of Emperor Trajan (recipe 8 in Chapter 35). We know that Trajan (Marcus Ulpius Traianus) died the year 117 AD, while still in charge of a military expedition against Parthians in northern Mesopotamia.<sup>8,9</sup> So, at least this piece of information must have been added to the text after the year 117 AD. On the other hand, Galen, in his book on *Synthetic remedies*, describes a collyrium for trachoma referring to it as a “recipe of Aelius”.<sup>10</sup> Indeed, in *Dynameron* there are several ophthalmological preparations with a composition similar to the one described by Galen. Knowing that Galen had lived for a while in Alexandria, he was very likely to have known the work of Aelius Promotus. These associations suggest that his reference to “Aelius” concerns indeed Aelius Promotus of Alexandria. Therefore, *Dynameron* should have been written before 160 AD, when it is estimated that Galen started writing his own books.

Aelius has used the Greek language of late antiquity, known as “Biblical Greek” or “Koine Helliniki”, the *lingua franca* of much of the Mediterranean region and the Middle East, following the expedition of Alexander the Great.<sup>11</sup> The word *Dynameron* is relevant to the word *dynameis* (actions of medicinal products), where also the modern term *Pharmacodynamics* originates from.

*Dynameron*, has the form of a “vade mecum”, a practical manual of therapeutics, with 870 different recipes for the treatment of 130 pathological conditions.

### 3. RECIPES IN DYNAMERON RELATED WITH NEPHROLOGY

Aelius Promotus describes in *Dynameron* 36 different recipes of nephrological interest, which are allocated in the following 4 chapters: Chapter 15: “Patients with kidney diseases”. Chapter 16: “Urolithiasis and diuretics”. Chapter 17: “Diuretics”. Chapter 18: “Ailments of the bladder and urination of blood”.

The recipes of each chapter are presented with ascending enumeration. A standard recipe includes: (a) The diseases for which it is indicated; (b) all required ingredients and excipients, with their respective weight or volume units; (c) instructions for the proper mixing and preparing the ingredients; and (d) dosage and also directions for administration. For reasons of simplicity, in the recipes cited here only the names of the ingredients are mentioned, without the respective weight and volume units. All ingre-

dients used in these recipes are presented in table 1, with comments on their identity, as well as a short description on their therapeutic use in antiquity, whenever possible.

#### 3.1. Chapter 15. Patients with kidney diseases (Πρός νεφριτικούς)

3.1.1. *Patients with kidney diseases, suffering from empyemas, gastric ailments, and recent or chronic catarrh.*

*Ladies' seal, Crocus, Torchwood, Myrrh, Spikenard, Dog rose, Storax, Camel's hay, Frankincense, Costmary, Apple, Raisin, Wild carrot, Honey, Sweet wine.* Give with honey diluted with water, or with sweet wine, a quantity equal to an Aegyptian bean or to a haze Inut.

3.1.2. *Patients with kidney diseases and difficulty in micturition (strangury).*

*Costmary, Parseley, Black pepper, Sweet wine.* Smash and dilute in sweet wine and give the half with a probe.

3.1.3. *Kidney diseases.*

*Wild carrot, Anise, Cucumber, Celery, Alexandrian senna, Bay laurel, Giant fennel, Alpine valerian, Water.* Dilute with water and make lozenges having the size of the seed of lupin. Give with empty stomach, at bedtime, with up to three cups of water.

#### 3.2. Chapter 16. Patients with urolithiasis and diuretics (Πρός λιθιῶντας καὶ διουρητικά)

3.2.1. *Patients with urolithiasis, from my own experience.*

*Bay laurel, Black pepper.* Give a large spoonful, with honey diluted in warm water.

3.2.2. *Diuretic, and for patients with urolithiasis, or difficulty in micturition.*

*Henbane, Hemlock, Opium poppy, Celery, Cucumber, Pine cones, Mallow, Almonds, Walnuts.* Give for improvement.

3.2.3. *Diuretic, and for patients with urolithiasis.*

*Myrrh, Wild carrot, Crocus, Bitter almonds.* Give to drink with water.

3.2.4. *Suitable for dissolving kidney stones.*

*Bay laurel.* Boil pieces of bark of bay laurel in water, until it evaporates to one third. Give to drink. Very effective.

3.2.5. *Patients urinating blood.*

*Myrrh, Cabbage, Opium poppy.* Dilute with sweet wine. Make pills and give the patient.

3.2.6. *Breaking down the stones of the kidney and expelling them.*

*Baldmoney, Purple betony, Parseley, Rock foil, Gromwell, Flax, Wild carrot, Skirret, Jews' stone, Black pepper, Wine, Honey.*

**Table 1.** Ingredients in the recipes of *Dynameron* referring to diseases of the kidneys and the urinary bladder.

Name	Description	Comments
Alexandrian senna – Κασία	<i>Senna alexandrina</i> ( <i>Fabaceae</i> )	Laxative and fungicide
Almonds – Κάρυα Θάσια	<i>Prunus dulcis</i> ( <i>Rosaceae</i> )	Source of minerals and other useful nutrients
Alpine valerian* – Νάρδος [Κελτική]	<i>Valeriana celtica</i> ( <i>Caprifoliaceae</i> )	Strong diuretic
Alumen – Στυπτηρία	The hydrated double sulfate salt of aluminium	Astringent (reducing mucosal secretions)
Anise* – Άννησον	<i>Pimpinella anisum</i> ( <i>Apiaceae</i> )	Carminative (reducing flatulence), diuretic and expectorant
Apple – Μηλον	<i>Pyrus malus</i> (the fruit) ( <i>Rosaceae</i> )	Digestive
Arabic gum* – Άραβικόν κόμμι	The dried exudate of <i>Vachellia seyal</i> ( <i>Fabaceae</i> ), known as "Red acacia"	A mixture of glycoproteins, used as an excipient. As emollient in urolithiasis
Asarabacca* – Άσαρον	<i>Asarum europaeum</i> ( <i>Aristolochiaceae</i> ) (the root)	Diuretic and emmenagogue
Baldmoney* – Μηνον	<i>Meum athamanticum</i> ( <i>Apiaceae</i> ) (the root)	Antiseptic and against cough. Used as a diuretic
Bay laurel* – Δάφνη	<i>Laurus nobilis</i> ( <i>Lauraceae</i> ) (decoction of the dried fruit or the bark)	Digestive (the essential oil of the fruit and the leaves). Used in strangury
Bitter almonds – Κάρυα [πικρά]	<i>Amygdalus communis</i> var. <i>Amara</i> ( <i>Rosaceae</i> ) The nuts (bitter almonds)	They contain amygdalin, which eventually yields glucose, benzaldehyde and traces of hydrocyanic acid
Black pepper – Πέπερι μέλαν	<i>Piper nigrum</i> ( <i>Piperaceae</i> ) (the fruit)	Digestive, stimulating, antibacterial, antipyretic
Butchers's broom* – Κοράλλιον	<i>Ruscus aculeatus</i> ( <i>Asparagaceae</i> ) (the root)	Diuretic
Cabbage* – Κράμβη [σπέρμα]	<i>Brassica</i> spp ( <i>Brassicaceae</i> ) (the seeds)	Mild laxative and diuretic
Camel's hay – Σχοιανανθός	<i>Andropogon schoenanthus</i> ( <i>Graminaceae</i> ) (the essential oil)	A native plant of Near East, with diuretic and antiseptic properties
Caper bush* – Κάππαρις [ρίζα]	<i>Capparis spinosa</i> ( <i>Capparaceae</i> ) (the root)	Diuretic, emmenagogue and carminative
Cardamom* (green) – Καρδάμμωμον	<i>Elettaria cardamomum</i> ( <i>Zingiberaceae</i> ).	Expectorant and gastroprotective
Castoreum – Καστόριον	Secretion of the perineal sacs of European beaver ( <i>Castor fiber</i> , <i>Castoridae</i> )	Antiinflammatory
Celery* – Σέλινον [κηπαίον]	<i>Apium graveolens</i> ( <i>Apiaceae</i> )	Diuretic, especially the seeds
Chicken egg – Ωόν [ρόφητόν]	The raw egg of <i>Galus galus</i> ( <i>Phasianidae</i> )	A source of protein
Cicadas – Τέττιγες	Dried cicadas ( <i>Tibicen plebejus</i> , <i>Cicadidae</i> ), collected during summer	No information available
Costmary* – Κόστος	<i>Tamasetum balsamita</i> ( <i>Asteraceae</i> ), or <i>Saussurea lappa</i> ( <i>Asteraceae</i> )	Digestive, astringent, antiseptic and diuretic
Crocus* – Κρόκος	<i>Crocus sativus</i> var. <i>graeucus</i> ( <i>Iridaceae</i> ) (the stigmas of the flower)	Diuretic, not only the stigmas but also the root, when is taken with wine
Cucumber* – Σίκυς [ήμερος]	<i>Cucumis sativus</i> ( <i>Cucurbitaceae</i> ) (the seeds)	Diuretic, laxative and vermifuge Suitable for ulcerations of the bladder
Cyclamen* – Κάσσαμος	<i>Cyclamen hederifolium</i> ( <i>Primulaceae</i> ) (the bulb)	Purgative and diuretic
Dog rose* – Ρόδα [φύλλα]	<i>Cynorrhodom</i> ( <i>Rosa canina</i> , <i>Rosaceae</i> ) (the leaves)	Antiinflammatory, antimicrobial, astringent
Fennel* – Μάραθρον	<i>Foeniculum vulgare</i> ( <i>Apiaceae</i> ) (the seeds, the decoction of the plant)	Carminative, digestive, lactagogue and diuretic. Suitable for kidney diseases and dropsy
Field mushroom* – Άγαρικόν	<i>Agaricus campestris</i> ( <i>Agaricaceae</i> )	Suitable for kidney diseases with dysuria
Figs (dried)* – Ίσχάδες	<i>Ficus carica</i> ( <i>Moraceae</i> ) (the dried fruit, dried figs)	Laxative and diuretic
Flax seed* – Λινόσπερμον	<i>Linum</i> spp. ( <i>Linaceae</i> ) (the seeds)	Diuretic and digestive
Frankincense – Λίβανος	<i>Boswellia sacra</i> ( <i>Burseraceae</i> ) (the resin)	A native plant of Near East with aromatic resin and presumed sedative and diuretic properties
Giant fennel* (oleoresin) – Άμμωνιακόν [θυμίαμα]	<i>Ferula communis</i> var. <i>brevifolia</i> ( <i>Apiaceae</i> ) (the resin)	Digestive and against dysentery. According to Dioscoridis, it may provoke hematuria

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**Table 1.** (continued) Ingredients in the recipes of *Dynameron* referring to diseases of the kidneys and the urinary bladder.

Name	Description	Comments
Giant Tangier fennel* – Κυρηναϊκός όπος (Σίλφιον)	<i>Ferula tingitana</i> ( <i>Apiaceae</i> ) (probably the dried oleoresin of the sap: <i>Assa foetida in lacrymis</i> (silphium))	A foul-smelling resin with applications against gastric and respiratory ailments
Ginger – Ζιγγίβερι	<i>Zingiber officinale</i> ( <i>Zingiberaceae</i> )	Digestive, antiemetic, spasmolytic, antiinflammatory, antibacterial
Grass* – Άγρωστις βοτάνη	<i>Cynodon dactylon</i> ( <i>Poaceae</i> ) (decoction of the plant)	A potent diuretic, also effective against urolithiasis, with antiviral and antimicrobial properties
Grecian bladderseed – Φουσαλλίς βοτάνη	<i>Vesicaria graeca</i> ( <i>Brassicaceae</i> ) (the seeds)	No data available
Gromwell* (common) – Λιθόσπερμον	<i>Lithospermum officinale</i> ( <i>Boraginaceae</i> )	Diuretic with stone dissolving properties, sedative and antipyretic
Hazelnuts – Κάρυα [Ποντικά, λεπισθέντα]	<i>Corylus colurna</i> ( <i>Betulaceae</i> ) (the nuts)	A rich dietary source of proteins and minerals
Hemlock* – Κώνειον	<i>Conium maculatum</i> ( <i>Apiaceae</i> )	At very low doses, for urinary bladder infections
Henbane* – Ύοσκύαμος	<i>Hyoscyamus niger</i> ( <i>Solanaceae</i> )	At very low doses, as a spasmolytic
Hogweed – Σφονδύλιον	<i>Heracleum sphondylium</i> ( <i>Apiaceae</i> )	Antiseptic, analgesic, digestive, antidiarrheal and antiepileptic
Honey* – Μέλι	Honey, often referred as "honey of Attica", was usually diluted with water	As an excipient, for improving the taste of the active ingredients
Hyssop* – Ύσσωπος [Κρητικός]	<i>Hyssopus officinalis</i> ( <i>Labiatae</i> ) (Cretan)	For sore throat and as an expectorant. It has also beneficial effects in urinary tract infections
Iris* (bearded) – Ίρις	<i>Iris germanica</i> ( <i>Iridaceae</i> ) (the rhizome)	Suitable as an excipient, because it contains aromatic viscous substances
Jews' stone* – Τηκόλιθος άρρην και θήλυς ("male" and "female") <sup>12</sup>	<i>Lapis Judaicus</i> , <i>Lapis Syriacus</i> , <i>Phaenicites</i> , or <i>Tecolithos</i> ("solvent stone")	Fossil spines of the sea urchin <i>Balanocidaris</i> (now extinct). Powder or shaves were used with the belief that they dissolve urinary stones
Laceflower* – Άμμι	<i>Ammi majus</i> ( <i>Apiaceae</i> )	For dysuria
Ladies' seal* (or Red bryony, or Cretan bryony) – Φύλλον	<i>Bryonia dioica</i> ( <i>Cucurbitaceae</i> ). The cucurbit <i>ampelos leuké</i> of Dioscoridis	A strong purgative, which has been used for gastrointestinal disorders, lung and liver diseases, as well as a diuretic
Linseed* – Λινόςπερμα	<i>Linum usitatissimum</i> ( <i>Linaceae</i> ) (the seeds)	A laxative mucus preparation, in gastritis and enteritis
Liquorice* – Γλυκύρριζα	<i>Glycyrrhiza glabra</i> ( <i>Fabaceae</i> ) (the root)	Beneficial in gastritis and gastric ulcers. Also, as an expectorant. Proposed for the inflammations of the kidneys and the urinary bladder
Mallow* (common) – Μολόχη [άγρια, σπέρμα]	<i>Malva silvestris</i> ( <i>Malvaceae</i> ) (the seeds)	Diuretic and astringent. The seeds have soothing properties in ailments of the urinary bladder
Mullein* – Φλόμος [φλοιός ρίζας]	<i>Verbascum thapsus</i> ( <i>Scrophulariaceae</i> ) (the bark of the root)	Astringent, suitable to treat diarrhea. Also as an expectorant
Myrrh* – Σμύρνα (Smyrna, Balsam of Mecca) (the resin)	<i>Balsamodendron myrrha</i> ( <i>Burseraceae</i> ). A native plant of Near East	"Balsamon", a resin with antiseptic and diuretic properties
Nut grass* – Κύπερος [σπέρμα]	<i>Cyperus rotundus</i> ( <i>Cyperaceae</i> ) (seeds and the stem of the flower)	As a diuretic, in nephrolithiasis and dropsy
Opium poppy* – Μήκων	<i>Papaver somniferum</i> ( <i>Papaveraceae</i> ) (the sap of the fruit)	A sedative with strong analgesic and anticough properties
Oreganon* – Όρίγανον	<i>Origanum vulgare</i> ( <i>Labiatae</i> ) (boil to reduce to one third)	Spasmolytic, digestive, carminative, expectorant, with anticough properties. Used in dropsy
Panax* – Πάνακες (το) [ρίζα]	<i>Opopanax hispidum</i> ( <i>Apiaceae</i> ) (the root)	Diuretic. It is mentioned by Theophrastus and also by Dioscorides who suggests its use in strangury
Parseley* – Πετροσέλιον [Μακεδονήσιον]	<i>Apium petroselinum</i> ( <i>Apiaceae</i> )	Diuretic for patients with pain in the kidneys or the bladder

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**Table 1.** (continued) Ingredients in the recipes of *Dynameron* referring to diseases of the kidneys and the urinary bladder.

Name	Description	Comments
Pepper – Πέπερι	<i>Piper nigrum</i> ( <i>Piperaceae</i> )	Orexigenic. Irritant for the mucosa in the alimentary and the urogenital system
Pine cones* – Στροβίλια [πεφωσμένα]	<i>Pinus halepensis</i> ( <i>Pinaceae</i> ) (the small cones, roasted)	Diuretic (the seeds), for patients with ailments of the bladder
Purple betony* – Βετονίκη	<i>Stachys officinalis</i> ( <i>Lamiaceae</i> )	Astringent with many uses in traditional medicine, diuretic
Raisins – Σταφίς [εκγιγαρτισμένη]	<i>Vitis vinifera</i> ( <i>Vitaceae</i> ) (the raisins, without the seeds)	Raisins are a precious source of sugars and minerals
Rhubarb* – Ῥήον [Ποντικόν]	<i>Rheum Rhaponticum</i> ( <i>Polygonaceae</i> )	Astringent, digestive, cholagogue, laxative and diuretic
Rocket* – Εϋζυμιον [σπέρμα]	<i>Eruca longirostra</i> ( <i>Cruciferae</i> ) (the seeds)	Digestive, diuretic, antiseptic, antiinflammatory
Rock foil* – Σαρξιδάγον (σαξιδραγος)	<i>Saxifraga</i> spp ( <i>Saxifragaceae</i> )	Digestive, soothes respiratory complaints, treats strangury and dissolves stones in the urinary bladder
Rue* – Πήγανος	<i>Ruta graveolens</i> ( <i>Rutaceae</i> )	Diuretic, emmenagogue and abortifacient
Safflower – Κνήκος	<i>Carthamus tinctorius</i> ( <i>Asteraceae</i> )	No data available
Scorpion (mottled) – Σκορπίος [τέφρα]	<i>Mesobuthus europaeus</i> ( <i>Buthidae</i> ) (the ashes)	No data available
Sheep sorrel* – Λάπαθον	<i>Rumex acetosella</i> ( <i>Polygonaceae</i> )	A strong diuretic suitable for urolithiasis
Skirret* – Σίνων	<i>Sium sisarum</i> ( <i>Apiaceae</i> ).	A diuretic suitable for urolithiasis
Soapwort* – Στρουθίον	<i>Saponaria officinalis</i> ( <i>Caryophyllaceae</i> ).	A diuretic suitable for urolithiasis
Spikenard* – Ναρδοστάχυς	<i>Valeriana Dioscoridis</i> ( <i>Nardaceae</i> ) (the essential oil of the root)	An essential oil with pleasant odour and diuretic properties
Starch – Ἄμυλον	<i>Amylum</i> (a polysaccharide of glucose, isolated from plants)	As an excipient (mainly the wheat starch)
Storax – Στύραξ	<i>Styrax officinalis</i> ( <i>Styracaceae</i> ) (the oleoresin)	As an antiseptic together with frankincense and galbanum
Sweet flag* – Ἄκρορον	<i>Acorus calamus</i> ( <i>Acoraceae</i> ) (the rhizome)	Digestive, carminative, antibacterial and diuretic
Thyme* – Θύμος	<i>Thymus vulgaris</i> ( <i>Labiatae</i> ) (the essential oil)	Contains thymol, which has been proposed for antiseptic, emmenagogue and diuretic properties
Torchwood* – Ξηροβάλαμον	<i>Amyris elemifera</i> ( <i>Rutaceae</i> ) (the resin)	The essential oil of the resin has antiseptic and diuretic properties
Tragacanth*, Astragale de Marseille – Τραγάκανθα	<i>Astragalus tragacantha</i> ( <i>Fabaceae</i> ) (the gum-resin)	Diuretic
Turtle dove – Τρυγών [ὄρνειον, κόπρος]	<i>Streptopelia turtur</i> ( <i>Columbidae</i> ) (droppings)	No data available
Vetch* – Ὅροβος [άλειρον]	<i>Vicia sativa</i> ( <i>Fabaceae</i> ) (flour)	The flour of vetch is diuretic and may provoke hematuria
Wall germander* – Χαμαίδρυς	<i>Teucrium chamaedrys</i> ( <i>Lamiaceae</i> )	Diuretic, suitable for patients with dysuria and dropsy.
Walnuts – Κάρυα [βασιλικά]	<i>Juglans regia</i> ( <i>Juglandaceae</i> ) (fruit)	A source of important nutrients
Water – ὕδωρ	Usually collected rain water	As an excipient, for dissolving ingredients. Also, for enforcing diuresis
White Opium poppy* – Μήκων [λευκή]	<i>Papaver somniferum</i> , var. <i>album</i> ( <i>Papaveraceae</i> )	A sedative with strong analgesic and anticough properties
White pepper – Πέπερι [λευκό]	<i>Piper album</i> ( <i>Piperaceae</i> ). The exfoliated seeds of <i>Piper nigrum</i>	Orexigenic. Irritant for the mucosa in the alimentary and the urogenital system
Wild carrot* – Δαυκος	<i>Daucus carota</i> ( <i>Apiaceae</i> ) (the root)	Digestive and diuretic
Wine [aromatic] – Κόνδιτος	Various types of wine and wine admixtures. The so-called "aromatic wine" (κόνδιτος) contained pepper and honey	Wines have been used as excipients for dissolving the ingredients of a recipe and also for improving the taste. Ethanol (usually 12-15%, per volume) is known for its diuretic properties
Wine [sweet] – Γλυκύς οἶνος		
Wine [white] – Οἶνος λευκός		
Wine [with honey] – Μελίκρατος (οἶνος)		
Wormwood* – Ἄρτεμισία [χυλός]	<i>Artemisia absinthium</i> ( <i>Asteraceae</i> ) (the sap). Most propably the plant described by Dioscoridis as «αψίνθιον»	Digestive, appetizer and anthelmintic. Diuretic, suitable for dropsy

Brackets contain additional specific information in the original text of *Dynameron*. The asterisk (\*) denotes that the plant is included also in the work *Materia Medica* of Dioscoridis.<sup>12,13</sup> Other sources were: Theophrastus,<sup>21</sup> Langkavel,<sup>22</sup> Schauenberg and Paris,<sup>23</sup> Riddle,<sup>24,25</sup> and an internet database on "Greek flora"<sup>26</sup>.

3.2.7. *Suitable for urolithiasis, in order to urinate the stone. Soapwort, Rhubarb, Caper bush, White wine.* This remedy dissolves completely the kidney stones in eight days.

3.2.8. *Provokes the urination of the kidney stones.*

*Turtle dove, Wine with honey.*

3.2.9. *Other similar.*

*Alexandrian senna, Myrrh, Frankincense, Wild carrot, Anise, White opium poppy, Nut grass, Jews' stone, Parseley, Crocus, Bitter almonds, Asarabacca, Storax, Black pepper, Honey, Wine, Water.* Dilute with warm water and honey. Give a dose the size of an Aegyptian bean with wine to feverless patients, and with water to those with fever.

3.2.10. *Other similar.*

*Mullein.* A handful of bark from the root of verbasicum should be smashed with a wooden mortar and pestle. Then treat with hot water and filter. Give the patient to drink for nine days, then stop for one or two days and then give to drink again for eleven days. After drinking the patient must take a long walk and have something to eat from time to time. It is very important to note that the patient and the physician should not have on them any iron item, nor in the fingers neither in the shoes or elsewhere. In addition, take care that the root of verbasicum is taken off the earth without any iron instrument, and also that once taken off it should not touch the earth again. This remedy I have used successfully many times.

3.2.11. *Another remedy for urolithiasis, tested with success by me.*

*Cicadas, Parseley, Ladies' seal, Wine (aromatic).* Give a spoonful of aromatic wine (containing pepper and honey), together with smashed cicadas, which should be collected when the vines are ripe and should be dried up in the shadow. Collect and dry many cicadas, so you may have whenever you need them.

3.2.12. *Patients who urinate sand.*

*Alpine valerian, Parseley, Black pepper, Rhubarb, Iris, Cabbage, Wine (aromatic).* Give a small spoonful with aromatic wine or wine with honey.

3.2.13. *Other remedy, for expelling stones, for nephropathies and for urination.*

*Alexandrian senna, Celery, Myrrh, White pepper, Frankincense, Jews' stone, Wild carrot, Anise, Storax, Opium poppy, Nut grass, Spikenard, Bitter almonds, Sweet flag, Asarabacca, Cucumber, Honey, Sweet wine.* A dose the size of fava bean is given with honey diluted in water. To feverless patients can be given together with a cup of sweet wine.

3.2.14. *Other.* It breaks and expels stones.

*Scorpion (mottled), Wine (aromatic).* Burn down scorpions

and mix up the ashes with diluted sweet wine. Give a small spoonful and you will be amazed with the results.

3.2.15. *Other.*

*Oreganon.* Boil oreganon in water, until it condenses to one third. Give a cup of the decoction, and the patient will urinate the stones.

### 3.3. Chapter 17. Diuretics (Διουρητικά)

3.3.1. *Cucumber, Celery, Liquorice.* Boil equal parts in water and give to the patient. You may observe the colour of blood in the urine.

3.3.2. *Other.* Patients with difficulty to urinate.

*Celery, Anise.* Boil together and give the patient to drink.

3.3.3. *Other.* Patients with difficulty to urinate.

*Thyme, Bay laurel, Hyssop, Oreganon, Parseley, Black pepper, Chicken egg (raw).* Trim, mix up and give together with a raw egg.

3.3.4. *Other.* A good diuretic for patients with difficulty to urinate.

*Thyme, Fennel, Bay laurel, Wine, Chicken egg.* Trim, mix up and give with egg, or diluted wine.

3.3.5. *Other.* Patients with painful urination (dysuria).

*Parseley, Black pepper, Wine (sweet).* Give a small spoonful with sweet wine, in the morning and the evening.

3.3.6. *Other.* For those seriously ill, men and women, who suffer from difficult and painful urination.

*Costmary, Honey, Water.* Give the patient to drink a cup with a mixture of these. Ask your payment beforehand.

3.3.7. *Diuretic with the name "diabetes" (διαβήτης).*

*Alexandrian senna, Cyclamen.*

3.3.8. *Other.*

*Crocus, Liquorice, Wine.* Dissolve in wine and make lozenges. Give one at a time, with wine.

3.3.9. *Other.* Patients with painful urination (dysuria). It is also digestive.

*Myrrh, Black pepper, Castoreum.* Give a mixture of equal parts, on demand.

3.3.10. *Other.* Patients with strangury. *Celery, Alexandrian senna, Thyme, Iris, Anise, Black pepper, Oreganon, Water.* Give as a warm water solution.

3.3.11. *Other.* Patients with strangury. Also effective in expelling stones. *Black pepper, Jews' stone, Spikenard, Parseley, Cardamom (green), Grass.* Give a decoction, together with wild grass (agrostis).

3.3.12. *Other.* Patients with dysuria.

*Parseley, Figs, Water, Honey.* Boil in water and give with wine and some honey.

3.3.13. *Other.*

*Nut grass, Wine diluted in water.* Give a small spoonful, together with diluted wine. The patient will urinate immediately.

3.3.14. *Other.* Patients with dysuria. *Fennel, Asarabacca.* Boil together and give the patient to drink.

### 3.4. Chapter 18: Ailments of the urinary bladder and for those who urinate blood (Πρός τά τῆς κύστεως πάθη καί αἷμα ἀπουροῦντας)

3.4.1. *Opium poppy, Cucumber, Hemlock, Celery, Sheep sorrel, Pine cones, Crocus, Almonds, Hazelnuts, Grecian bladderseed, Cretan sweet wine.* Mix and dissolve everything in Cretan wine. Those with urinary bladder ulcerations should be treated with instillation through the urethra.

3.4.2. *Other.* In patients with dysuria, it breaks down the stones and expels them with the urine. Moreover, it cures many ailments of the urinary bladder, such as inflammations, ulcerations and blood clots. *Parseley, Rue, Wild carrot, Wall germander, Safflower, Black pepper, Myrrh, Rocket, Laceflower, Ginger, Ladies' seal, Wormwood, Sweet wine.* Give to drink with sweet wine, before bathing.

3.4.3. *Patients with ureteral pain, urinary retention, dysuria, blood urination and nephrolithiasis.* It is called "Hippocrates's" (Ἱπποκράτους) or "herbal" (διὰ τῶν φυτῶν).

*Asarabacca, Baldmoney, Alpine valerian, Honey of Attica.* Mix with honey of Attica and give a dose equal to a hazelnut to healthy individuals. For children and old people, give less. Keep the ingredients dry, so they retain their efficacy.

3.4.4. *Any kind of pain in the urinary bladder.*

*Mallow, Wine with honey.* Dissolve in wine and honey, and give a cup. Stops the pain of the bladder and stops even the inflammation.

3.4.5. *Other.* Patients with blood in urine, urinary bladder inflammation and ulceration.

*Linseed, Cucumber, White opium poppy, Tragacanth, Starch, Sweet wine.* Dissolve first tragacanth in sweet wine, and then dissolve the other ingredients. To patients with blood in urine, give three cups with water and sweet wine. To others, according to their needs.

3.4.6. *Other.* Acute pain and ulcerations of the urinary bladder.

*Wild carrot, Parseley, Myrrh, Field mushroom, Cardamom (green), Alexandrian senna, Panax, Crocus, Giant Tanagier*

*fennel, Hogweed, Butchers's broom, Black pepper, Vetch, Wine with honey, Water.* Dissolve in wine with honey. Give with water a dose equal to a fava bean.

3.4.7. *Blood in urine.*

*Dog rose, Opium poppy, Pine cones, Sweet wine, Water.* Give a dose equal to a hazelnut, with two cups of sweet wine and one cup of water.

3.4.8. *Other.* Patients with urinary bladder bleeding.

*Alumen, Tragacanth, Arabic gum, Sweet wine, Water.* Dissolve in wine and water.

3.4.9. *Other.* Blood in urine.

*Myrrh, Opium poppy, Sweet wine.* Dissolve in sweet wine and make pills to give the patient, according to the instructions.

## 4. DISCUSSION AND CONCLUSIONS

In the cited 41 recipes related to ailments of the kidneys and the urinary bladder, Aelius Promotus describes the use of about 80 different herbs, 6 ingredients of animal origin, as well as 1 mineral. As excipients, he uses water, wine or honey. A large number of active ingredients are applied in each recipe, a typical characteristic of the Empiric school of medicine. In most instances, they represent well-established remedies suitable for diuresis and for treating the causes and symptoms of specific ailments, such as strangury, dysuria, nephrolithiasis, hematuria, and the inflammation of the kidneys or the urinary bladder. Quite often, the author adds personal comments on the efficacy of a recipe, referring to his previous experience. This indicates that *Dynameron* is an account of treatments proposed by an experienced practicing physician, and not a mere compilation of earlier recipes.

Many of the recommended herbal ingredients are intended for diuresis in case of difficulty in micturition (strangury), mostly related to urolithiasis. Several other pathological conditions are not specified (as e.g. nephritis, cystitis or bladder cancer), although they are implied indirectly, by the terms "urination of blood", "urinary bladder inflammation" and "urinary bladder ulceration".

In general, Aelius Promotus proposes the use of several herbal remedies, in order to increase urination, as shown in table 1. Of these plants, some possess genuine diuretic properties, according to our current knowledge of Pharmacognosy.<sup>17,20</sup> On the other hand, there are also plants facilitating diuresis due to their high water content. So, increased urine output is mainly the consequence of an augmented fluid intake, a rather common practice by Greek

physicians in antiquity.<sup>12</sup> On the other hand, the use of a strong spasmolytic like henbane (*Hyoscyamus niger*) or a strong analgesic like opium poppy (*Papaver somniferum*) is fully justified for kidney diseases and especially in cases of nephrolithiasis. As a matter of fact the active ingredients of these plants (scopolamine and morphine, respectively) continue to be unreplacable agents in the armamentarium of modern medicine.

With a few exceptions, most remedies proposed in *Dynameron* for the ailments of the kidneys and the urinary bladder can be encountered in *Materia Medica* of Dioscoridis, where they are granted similar clinical uses.<sup>13,14</sup> However, nowhere in *Dynameron* is mentioned the name of Dioskoridis, despite the fact that Aelius Promotus is usually very eager to acknowledge the origin of a recipe. It is true, that the time gap between these two authors is rather narrow, leaving space for a speculation that Aelius might have ignored the work of Dioscoridis. The fact that both writers advocate the same plants as remedies for the same clinical indications may simply show that all these therapies represented a well-established common knowledge of their time.

It is worth commenting the method proposed for the therapy of the “ailments of the urinary bladder and urination of blood” (Chapter 18), where it is suggested that patients with urinary bladder ulcerations should be treated with instillations through the urethra. This is a proof that Alexandrian physicians were aware of the anatomical details of the human body. Moreover, it reminds us the high level of expertise reached by surgery at that time, as well as the existence of elaborate instruments, such as catheters.<sup>3</sup>

Although Aelius Promotus was apparently a knowledgeable physician, some of his remedies are obscure and questionable. Perhaps the most typical example is *Jews' stone*, as an agent that contributes to the dissolution of renal stones. This very specific product was included in the official British Pharmacopoeia until the middle of the 19th century,<sup>15</sup> but the scientific community has not come

yet to a conclusion on its possible therapeutic value.<sup>16–18</sup>

On the other hand, the detailed description of how mullein is harvested (Chapter 16, recipe 10) is definitely a superstitious ritual. In other chapters of *Dynameron*, not presented here, there are several examples of superstitions, usually referring to the moon phase, or to the need to invoke a divine power while preparing or administering a recipe. Magic remedies and superstitious beliefs, not uncommon among medical writers of that time including Dioscoridis, are gradually eliminated with the progress of time and they are virtually absent in medical texts of the late Byzantine period.<sup>19,20</sup>

Aelius Promotus describes the treatment of many ailments of the kidneys, by using about one hundred different ingredients, several of them easily recognizable for their efficacy in the light of modern science. By adding various comments to his recipes, he enriches the medical information with hints of the everyday clinical practice. In most instances, he is very confident and he does not hesitate to praise the efficacy of a recipe. However, there is one exception. In the 6th recipe of Chapter 17 (“For those seriously ill, men and women, who suffer from difficult and painful urination”) he seems almost cynical in his final advice: “Give the patient to drink a cup with a mixture of these. *Ask your payment before hand*”.

Overall, in the second century AD, Aelius Promotus left to the younger physicians an account of his personal medical experience on 130 ailments. *Dynameron* is an almost complete therapeutic manual written at a time when Alexandria was still a city with a glorious medical tradition. The historical value of this text has not been given yet the attention it deserves.

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#### ΠΕΡΙΛΗΨΗ

##### Οι νεφρολογικές παθήσεις σε ένα αλεξανδρινό κείμενο της ύστερης αρχαιότητας

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Ένα ελληνικό ιατρικό χειρόγραφο με τον τίτλο *Δυναμερόν* φυλάσσεται στην Εθνική Μαρκιανή Βιβλιοθήκη της Βενετίας (Cod. gr. 295) και αποτελεί αντίγραφο ενός έργου που αποδίδεται στον Αίλιο Προμώτο, έναν ιατρό ο οποίος έζη-



σε και εργάστηκε στην Αλεξάνδρεια τον 2ο αιώνα μΧ. Αυτό το χειρόγραφο δεν πρέπει να συγχέεται με το ογκώδες *Μέγα Δυναμερόν* που γράφηκε τον 13ο αιώνα από τον Νικόλαο Μυρεψό και περιέχει 2667 συνταγές. Το *Δυναμερόν* του Αίλιου Προμώτου περιέχει 130 κεφάλαια που περιγράφουν 870 συνταγές για διάφορες ασθένειες. Για τις νεφρολογικές παθήσεις, υπάρχουν 41 συνταγές, με μείγματα από περίπου 80 βότανα. Επιπλέον, υπάρχουν έξι προϊόντα ζωικής προέλευσης και ένα ορυκτό. Ο μεγάλος αριθμός συστατικών που χρησιμοποιούνται σε κάθε συνταγή υποδηλώνει ότι ο Αίλιος Προμώτος ήταν οπαδός της επονομαζόμενης «Εμπειρικής σχολής», παρόλο που στο έργο του είναι εύκολα αναγνωρίσιμες και επιρροές από άλλες ιατρικές θεωρίες. Πολλά από τα φυτικά συστατικά που προτείνει ο συγγραφέας είναι γνωστά για τις διουρητικές, σπασμολυτικές, αναλγητικές και αντισηπτικές τους ιδιότητες. Ως εκ τούτου, είναι κατάλληλα για τη θεραπεία της νεφρολιθίασης, της στραγγουρίας, της δυσουρίας, της αιματουρίας, καθώς και των φλεγμονών των νεφρών και της ουροδόχου κύστης. Ορισμένες από τις συνταγές περιέχουν συστατικά με ασαφείς ιδιότητες, για τα οποία δεν είναι δυνατή η συσχέτιση με κάποια λογική θεραπευτική δράση. Υπάρχουν, μάλιστα, και παραδείγματα συνταγών με χαρακτηριστικά δεισιδαιμονίας, που παραπέμπουν σε πρακτικές μαγικών ιεροτελεστιών. Ωστόσο, όταν αξιολογείται το *Δυναμερόν* στο σύνολό του, το συμπέρασμα είναι ότι ο Αίλιος Προμώτος ήταν ένας πεπειραμένος και πολυμαθής ιατρός, ιδιότητες που αντανάκλουν την περίφημη ιατρική παράδοση της Αλεξάνδρειας κατά την ύστερη ρωμαϊκή περίοδο. Φαίνεται ότι το *Δυναμερόν* αντιγράφηκε αρκετές φορές κατά τους επόμενους αιώνες, προκειμένου να χρησιμεύσει ως εγχειρίδιο θεραπευτικής, για τις κοινές ασθένειες που μπορεί να αντιμετωπίσει ένας ιατρός στην καθημερινή του πρακτική.

**Λέξεις ευρητηρίου:** Αίλιος Προμώτος, Αλεξάνδρεια, *Δυναμερόν*, Νεφρολογία, Ουρολιθίαση

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