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***IGNIS SACER* ACROSS THE LITERARY AND MEDICAL TRADITIONS  
(1ST CENTURY BC – 11TH CENTURY AD).  
Study of the Term’s Semantic Transformations; Identification of Associated  
Diseases and Therapeutic Methods.**

**Abstract**

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The dissertation consists of an introduction, three chapters, conclusion, contributions, bibliography and appendices. It has a total length of 470 pages, of which 361 pages is the main text, 33 pages bibliography and 74 pages appendices. Across the text of the dissertation, nine tables and one figure are included. There are 214 figures in the appendices. The bibliography consists of 485 titles, including 162 editions of sources, 294 titles of cited secondary literature (19 in Cyrillic, 275 in Latin script), and 29 online platforms with digitized resources. The list of publications and section papers in conferences on the subject of the dissertation includes ten titles.

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## 1. Introduction

### 1.1. Subject of the study

The subject of this dissertation is the semantic transformations of the term *ignis sacer* from its first attested use in the 1st century BC to its disintegration in the 11th century and its replacement by *ignis sancti Antonii* and other similar expressions in various national languages. Within this period, the term persists sufficiently to enable the approximate identification of the diseases and therapeutic practices associated with it.

### 1.2. Aims and objectives of the dissertation

The study aims to analyse the diachronic development of the term in the period outlined. In addition, an attempt is made to identify the diseases to which the term was used to refer. The study also analyses the therapies administered and identifies the medicinal ingredients used.

The specific tasks, which represent individual steps towards the fulfilment of the set objectives, are as follows:

1. To collate a corpus of sources in which the phrase *ignis (s)acer*, used in connection with a disease, is attested. The sources are grouped according to the following criteria:
  - 1.1. Sources/authors, both literary and technical – medical treatises and poems essential for the identification of the disease as they contain some description of symptoms.
  - 1.2. Sources/authors with purely literary/symbolic use of the phrase, where the symptoms described are fictional and do not reflect an existing historically attested medical phenomenon.
  - 1.3. Sources/authors that prescribe therapy for *ignis (s)acer* but contain no nosography, phytography, or descriptions of medicinal substances of another origin. Using the prescribed combinations of therapeutic ingredients, the original sources of these passages are traced in order to arrive at proposed identifications of the therapy's medicinal constituents, as well as the possible pathological conditions under the name *ignis sacer*.
2. To compile a secondary corpus of sources essential for the identification of therapeutic substances used against *ignis sacer*. These sources are selected because they contain a description of the morphology and properties of the plants or non-plant constituents of the medicinal preparations.
3. To create a methodological tool (a relational database) for processing, categorising and storing the large volume of diverse sources traced over a considerable period. The database also logs the linguistic, historico-medical and ethnophytotherapeutic information extracted from said sources.

4. With the help of this tool for statistical data analysis of the corpus of sources thus compiled, the thesis aims to outline several parameters of the term *ignis (s)acer's* development and the changes in its semantic content. It further aims to establish how the phrase functions in literary works, in medical writings and in texts that reflect specific historical events.

5. To compile a list of the medicinal plants, non-plant medicinal substances (mineral, animal, bee, etc.) and treatments that have been used for *ignis sacer* therapy

5.1. To identify the medicinal ingredients according to current scientific classification.

5.2. To highlight the most commonly used plants, non-herbal medicinal substances and procedures. To group all ingredients by origin and type of use.

5.3. To trace from which author originates the first use of individual plants or other medicinal substances and to establish whether there were newly introduced therapeutic agents in the period from the 1st century BC to the 11th century AD or whether they were all based on ancient sources.

6. To compile a glossar of the identified names of medicinal substances including the Latin lexemes and their Ancient Greek counterparts.

### **1.3. Current state of research on the term *ignis sacer*, *ignis sancti Antonii* and the history of ergotism**

In the scientific literature, the terminological phrase *ignis sacer* and its variations have been insufficiently discussed and only as part of the prehistory of the term *ignis Sancti Antonii*, which replaced *ignis sacer* after the 11th century.

In the 17th century, the ergot was identified as the causative agent of ergotism<sup>1</sup>, and soon thereafter studies appeared that sought to trace the manifestations of this poisoning as far back in time as possible. The effect of tunnel vision is created as researchers everywhere seem to overattribute ergotism as a likely explanation for past epidemics or even for individual medical cases in the written sources. In the mid-19th century, *ignis sacer* appears in studies dedicated to the history of other diseases as well.

We have found no study to date that focuses on the earlier and more obscure period of the term's development (before the 11th century). So far, no attempt has been made to comment on the therapy prescribed in this early period or to try and establish correlations and trends in the use of medicinal substances. Neither have therapy-related citations for *ignis sacer* been traced in the secondary literature. For some sources that prescribe treatment but do not provide a description

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<sup>1</sup> A type of mycotoxicosis, poisoning by an alkaloid contained in the fungus parasitic on rye and other cereals called *Claviceps purpurea* (Fr.) Tul. Before the causative agent was identified, mass poisonings were perceived as epidemics of contagious disease (van Dongen, de Groot 1995: 110-111).

of the disease, no specific attempts have been made to identify the disease. In these therapy-related sources, the term is translated according to the stereotype imposed for the entire era – erysipelas until the 10th century, and ergotism thereafter. For the same authors, no identification has been attempted of the plant species and other substances prescribed for treatment, relying instead on general-use dictionaries. Researchers involved in the identification of therapeutic constituents and researchers focusing on the diseases treated with these constituents seem to belong to two distinct groups whose expertise does not intersect and does not create conditions for further research. The present study will attempt to fill this gap in the field so that the analysis of therapy for *ignis sacer* can be used to further clarify semantic changes in pathological terms.

#### 1.4. Corpus of sources and methods used for its analysing.

##### 1.4.1. Corpus of sources

The main corpus of sources logged into the custom-made relational database includes 225 quoted passages in Latin and 45 in Ancient Greek<sup>2</sup> from the following ancient and medieval authors:

**30 Latin-language authors from the 1st century BC to the 11th century** – Titus Lucretius Carrus, Publius Virgilius Maro (Virgil), Publius Ovidius Naso (Ovid), Lucius Annaeus Seneca the Philosopher, Marcus Annaeus Lucanus, Aulus Cornelius Celsus, Lucius Junius Moderatus Columella, Scribonius Largus, Gaius Plinius Secundus (Pliny the Elder), Quintus Gargilius Martialis, Quintus Serenus Sammonicus, Alcimus Ecdicius Avitus, Maurus Servius Honoratus' commentary on Virgil, Theodorus Priscianus, an anonymous commentary on Lucanus, Pseudo-Plinius, Dioscorides Lombardus, Apuleius Platonicus (Pseudo-Apuleius), Pseudo-Dioscorides, Pseudo-Galenus, Cassius Felix, Caelius Aurelianus, Pliny Valerian, Marcellus Empiricus, Sextus Placidus, Isidore of Seville, Benedictus Crispus, Andrew of Fleury, Odo of Meung (Macer Floridus), Haymo of Halberstadt, Sigebertus of Gembloux

- **Two anonymous monastic medical collections** – the Lorsch Pharmacopoeia from Codex Bambergensis Medicus 1 (7th century), the Medical Formulary from Codex Sangallensis 44 (9th century)
- **Some Greek authors** – although the study focuses on tracing the use and development of the term only in the Latin sources, it additionally includes authors such as Thucydides, Dioscorides, Galen and Eusebius of Caesarea, who, although partly outside the studied period and not giving accounts of this particular term in this form (*ignis sacer*), are key to the identification of the described diseases or medicinal substances in some of the Latin authors.

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<sup>2</sup> In the database, several of the larger quotes were split into individual prescriptions.

A second additional corpus of quotes related to the identification of therapeutic substances includes some 350 references, mostly to Pliny the Elder, Dioscorides, but also Theophrastus, Cato, Varro, Columella, Vitruvius, Galen, Pseudo-Apuleius, Pseudo-Dioscorides. The illustrations of identified plants from three manuscripts of Dioscorides are appended separately. These passages are not logged in the database but are noted in the chapter on the identification of therapeutic constituents.

#### **1.4.2. Criteria in the formation of the corpus of sources**

From the secondary literature, an initial selection of sources has been made, containing authors mentioning *ignis sacer*. The major works on medical subjects in the 1st to 11th century have been systematically reviewed and all related references, given in critical editions or as commentary on translations referring to additional passages, have been traced. A keyword search has been carried out in the major databases such as Perseus, Digilibit, Corpus corporum, etc., and passages where the phrase is used with a meaning unrelated to disease were excluded from the results.

#### **1.4.3. Method of source analysis**

In the search for the most appropriate method of analyzing the sources, a survey of the main contemporary studies on the history of medicine has been made, tracing the development of the concept of disease and that of the various methods for diagnosis, with a view to retrospectively apply them to written sources. The nature of the source material implies the hypothetical character of the identifications of therapeutic substances and diseases since there are no available specimens – only text. In this respect, in the spirit of studies such as those of John Riddle (Riddle 1985: 5-6), one of the main tools for confirming or rejecting a hypothesis is cumulative evidence. To store, structure and process all the collected information according to different criteria, we created a relational database. This tool makes it possible to quantify and extract different interdependencies and linkages between sources. The database is used to analyze the syntactic peculiarities of the phrase *ignis sacer* in a narrow context and to determine its phraseological status in the different types of sources. Differences in the use of *ignis sacer* in medical and non-medical sources are more clearly defined. After examining the separate semantic fields of the two components of the phrase, connotations related to symptoms are differentiated from those related to disease aetiology. The features of the word order are also examined. The analysis of the symbolic imagery in the group of non-medical sources and the tracing of the influences of earlier texts on later texts helps to highlight the semantic patterns that are observed in these non-medical sources but are absent in the medical ones. In the medical source group, database-enabled diachronic analysis of therapy proves to be essential for tracing relationships between different sources and tips the scales towards one probability or another.

#### 1.4.4. Method for the identification of pathological conditions

The process of identifying possible contemporary nosological entities that can be diagnosed over the centuries in the use of *ignis sacer* involves several steps. All retrospective diagnoses made in the secondary literature are collated, their feasibility assessed, and the arguments proposed for the disease identification are compared. Passages that provide a description of symptoms are analyzed and information that could be compared with contemporary nosography is extracted from the narrative. The presence or absence of major symptoms that would be determinant in confirming or rejecting a supposed diagnosis is sought. The therapy prescribed is analyzed, which, in authors who do not describe the disease manifestation, is the only way to trace the tradition of the text to another source that gives such a description and can be analyzed, this source often being Greek. For each author separately, a certain range of Ancient Greek terms and their specific Latin equivalents are traced. Where archaeological evidence has been laboratory tested, its results are compared with analyses of the written sources and modern research in paleopathology and genome sequencing of viruses is taken into account. A number of parameters – remaining hypothetical to different degrees – accrue, thus the principle of cumulative evidence is again applied.

#### 1.4.5. Method for the identification of therapeutic ingredients

In the identification of plant and other therapeutic substances, we consult general-use dictionaries (such as Lewis, Short 1879, Forcellini 1771, TLL, etc.) and specialized Latin dictionaries for plant names or medical terms (such as André 1985; WMD; Durling 1993). A comparative analysis is made of the affiliations in the editions and translations of the particular passage or in the index of the work concerned, with the greatest weight given to editions with notes and indices on Pliny and Dioscorides. By comparing Pliny and Dioscorides, which share numerous sources and corresponding passages, the most accurate Ancient Greek equivalent of the Latin term can be found and it is easier to trace other Ancient Greek sources relevant to the description and use of therapeutic substances.

We examine and compare eight editions of Pliny the Elder, two critical editions of Dioscorides, and five translations with commentary. In the affiliation of plants in Dioscorides, but also in all authors who borrowed from him, it is useful to consult the botanical illustrations accompanying three of the manuscripts of the „On Medicinal Materials“ (Περὶ ὕλης ἰατρικῆς) – the *Codex Julia Anicia* (JAC), also called *Codex Vindobonensis Medicus Graecus 1* (6th century), *Codex Neapolitanus* (NAP) of the late 6th or early 7th century and *Morgan 652* (M652) of the 9th-10th centuries. Combined with the texts of Dioscorides and Pliny, the images are useful in supporting or rejecting the existing suggestions of botanical affiliation.

The phytographic passages in Pliny and Dioscorides and the identifications made for them are compared not only with each other, but also with the suggestions given in the editions and translations of all the other authors included in the corpus of sources who have mentioned the ingredient or plant in question, and sometimes also in other relevant sources such as Theophrastus, Scribonius Largus, Hippocrates and Galen. The information gathered from the sources and the proposed identifications in the commentaries is compared with contemporary reference botanical literature.

The quest for points of intersection between a modern taxonomic description and an ancient or medieval source is difficult also because the principles of phytography were not standardized before the 19th century, so that not only does the classification of species diverge from that of the ancients, but so do the features by which they are defined (André 1985: VIII). The text of Ancient and Medieval sources must be interpreted in such a way as to distinguish those defining characteristics that are key to modern phytography; in modern studies, evidence of biological features or ecological requirements of plants must be sought to help confirm or reject a given hypothesis. When analysing affiliations in commentaries or specialized dictionaries, the edge cases needing additional identificatory evidence are highlighted. The names of the taxa are cross-referenced in contemporary taxonomic literature, as this is the only way to isolate variations that can be qualified as synonyms referring to the same taxonomical unit from unresolved grey areas between different taxa (species or even genera of plants). The current „World Flora Online“<sup>3</sup> website (WFO 2023) is used to verify the accepted modern scientific plant names. For modern plant descriptions, the most commonly used are the „Flora of Europe“, „Flora of the Republic of Bulgaria“ or „Flora of Turkey and the Eastern Greek Islands“.

The distribution of taxa proposed in the secondary literature is examined to eliminate neophytes or unlikely foreign species not native to the area or era described. For reference, we use „The Euro Med PlantBase“ (EMPB 2011) and „Plants of the World Online“ (POWO 2017), which indicate the distribution and origin of plants in the European flora and especially in the Mediterranean.

For mineral substances, a dictionary similar to Andre's for plant substances is not available. Among our chief sources are Pliny the Elder, Dioscorides, and Theophrastus' *On Stones*. Studies on the uses of minerals in Antiquity such as that of George Rapp (Rapp 2009) and Nathaniel Moore (Moore 1834) stand out as important. It is also necessary to consult online platforms such as the Webmineral Mineralogy Database (WMD 2012) and PubChem, the largest open-access online platform for chemical information.

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<sup>3</sup> This is an open-access, web-based compendium of the world's plant species that is updated regularly.

## **2. Terminological and methodological foundations of the research**

### **2.1. „Disease“ and „diagnosis“ as social and philosophical concepts. The multidisciplinary scientific approach to the definition of medical concepts**

This part of the thesis compares ancient and modern conceptions of disease and diagnosis. It discusses the main modern methods of diagnosis and the difficulties of applying them to written sources. It discusses the types of data needed to identify pathological conditions more accurately in sources. It concludes that, in order to semantically analyze concepts used in the past and find one or more contemporary correspondences for them, the most appropriate method is to attempt a retrospective diagnosis, which in turn is a hypothesis stemming from a differential ontological diagnosis. The concept of „pathocenosis“, introduced by Mirko Grmek (Grmek, 2019: 33-40), is discussed. According to Grmek, pathogens in a given pathogenesis can be in symbiosis, i.e. one disease can predispose to another, they can be indifferent and simply coexisting, but they can also be antagonistic, i.e. two or more pathogens can compete and one suppresses the manifestations of the other. In analysing the sources, as many factors as possible should be taken into account. Beyond reports of symptoms and mortality rate, a general description of the cultural, social and environmental setting is valuable, as well as geographical and climatic conditions and any evidence of coexisting diseases, the level of medical knowledge and the therapy used.

### **2.2. Database development as a tool for multifactor analysis of medical, botanical and pharmaceutical terminology in the sources studied**

Products such as MS Access enable the creation of small, subject matter databases. The Ignis Sacer Data Base (hereafter cited by the acronym ISDB) was created for the purposes of this study and provides the following capabilities as an IT tool for diachronic and multifactor tracking of medical terminology in Ancient and Medieval sources:

- The data is stored and structured in a single file that is easy to back up, fill in and modify and does not take up much space in computer memory or on external storage devices;
- Objects are categorized and stored in separate tables containing information about them only and each record has a unique identifier that is used for relating to other tables;
- The main tables are linked together by relations in one overarching structure;
- Data is entered once in a table and corrected only in that table, as changes are reflected cascading through all related tables. This prevents technical or subjective error;
- It facilitates making corrections and highlighting similarities and repetitions in the sources;
- To more easily populate the overarching structure with already built relations, different data entry forms are created that contain fields from many different tables;

- The database provides a variety of options for extracting information from the data by generating queries that can be saved for various analyses.

### **2.2.1. Main objects and functions of the relational database implemented in ISDB**

Building the structure of the custom database requires a preliminary analysis of the material to clarify:

- what object types are there;
- what are the hierarchical relationships between all objects;
- how to allocate objects to tables without data duplication;
- what type of information should be retrievable.

### **2.2.2. Primary tables**

The number of primary tables corresponds to the number of object types in the study. They store basic information about these objects without repetition. In the ISDB, the primary tables are:

- Authors.
- Works.
- Citations – quotes with a wider context, including therapy.
- *Ignis sacer* citations – instances containing the phrase *ignis sacer* with minimal context – used to track morphological, syntactic patterns and variations.
- Affiliated species of medicinal plants.
- Other therapeutic products.
- Therapeutic procedures.
- Bibliography.

In the dissertation, the structure of each individual primary table in ISDB is discussed and a description of all fields is given. All the main objects and functions of the relational database implemented in ISDB are described and explained in detail.

At the heart of all these tables, containing the unique individual objects, are the source quotes. Branching out from them are the various threads that the ISDB traces and stores. Their attributes determine the structures created. This is how the multidimensional structure of the relations in the ISDB takes shape (see Fig. 1).



original form, or broaden or narrow its scope. Diachronically, the same lexical or phraseological unit that has transformed due to metaphorical use inevitably undergoes multiple redefinitions. However, it is not only the terms themselves that change – due to their passage through multiple recipients – but as medical science evolves, the criteria through which diseases are told apart also change, and this inevitably leads to the need for reformulation of these professional codes.

### 3.1. *Ignis sacer* and their semantic areas

The two parts of the phrase are examined separately in the dictionaries. The evolution of the meaning of *sacer* is traced, which developed positive connotations of „sacred, holy, divine“ during the royal period in Rome (8th-11th centuries BC), but even after that did not lose the earlier layer associated with the idea of „cursed“ and „unclean“. The double meaning of *sacer* is also commented on in Ernout and Meillet's etymological dictionary of the Latin language (Ernout, Meillet 2001: 586): „The idea of *sacer* does not coincide with that of „good“ or „bad“; it is a separate idea“. *Sacer* denotes a person or object that cannot be touched without being defiled, or without contaminating the toucher – hence the double meaning of „sacred“ and „cursed“. Loaded with all these meanings – both begotten by or belonging to the divine, and subject to its punishment – *sacer* is also used as an epithet in polynomial terms for diseases. The most characteristic example is the so-called „sacred disease“ – *morbus sacer*, equivalent to the Ancient Greek ἱερὰ νόσος, today known as epilepsy. Although it has been known and described for millennia, seizures are feared and have always given rise to myths and superstitious beliefs, which Hippocrates sought to dispel. According to him, people call the disease „sacred“ because they know too little about it and do not understand it (Hipp., Morb. Sacr, I. 1), and the name ἱερὰ νόσος has been invented by those charlatan physicians who wish to transfer the responsibility for their potential failure to the divine since if the disease is of divine origin the physicians are by definition powerless before it, and if the disease subsides of its own accord they will ascribe to themselves extraordinary merits (Hipp., Morb. Sacr., I. 2).

The semantic transformations of the phrase *ignis sacer* over the centuries are not reflected comprehensively in the Latin dictionaries for the periods of Antiquity and the Middle Ages. The references cited as examples in such dictionaries do not provide a comprehensive picture of the use of the term in the period from the 1st century BC to the 11th century. We examine the identifications in Du Cange's dictionary (Du Cange 1883-1887: IV, 289c), in the Thesaurus linguae Latinae (TLL 7,1: 294), in the Oxford Latin Dictionary (OLD 2016: 905). It appears that in some cases, as in Lewis and Short's dictionary (Lewis, Short 1879), the given definition may even cause confusion – there the standing definition for *ignis sacer* is „disease, St. Anthony's fire, erysipelas“. However, the passages given as an illustration refer to Celsus, Virgil, and Columella,

and in none of these writers can the disease be identified as erysipelas. These sources do not belong to the era in which the expression is identified with „St. Anthony's fire,“ which is used primarily to denote ergotism. It is noted that there is a need for a more systematic tracing of the sources and an attempt to delineate the various meanings that we might try to offer as a contextualized translation of *ignis sacer* in the various texts.

Based on the corpus of sources compiled for the study, we can conclude that in the phrase *ignis sacer*, the substantive part *ignis* covers the semantic range that is related to what we observe – the symptoms and manifestations of the disease. On the other hand, the attributive part *sacer* covers what remains outside the sensory field – the aetiology of the disease, but not in the modern sense of a causative agent that can be isolated and observed under a microscope, but in the sense of a cause of the disease as a religious/moral concept. In the context of illness, *ignis* triggers a wide range of associations with the following symptoms: high fever, inflammation, burning sensation, red skin colour (the same red that we see as colour in burning charcoal), black skin colour, e.g. in gangrene (the same as seen in cooled charcoal), pale greyish colour (similar to ash), blistering as from a burn, any skin lesions that include ulceration, general redness, local temperature, redness of the eyes as from smoke, of the throat, tongue or face, pain on touch, indeterminate internal pain as from a burn. The element of *ignis* is also associated with rashes that creep and spread like wildfire – the edges of the skin can be distinctly outlined as far as the infection extends. Around the word „fire“ a large semantic circle is formed of related lemmas associated with heat (*fervor, ardor, aestus, febris*), flame (*flamma, comburo, incendo, uro, flagro*), colours (*rubor, pallor, nigresco, carbo, carbunculus, anthrax*), sores and boils (*ulcera, pusula, herpeta, erysipelata, erythemata, exanthemata, achora, serpuscula*), disease (*morbus, lues, pestis, malus*).

*Sacer* implies that the disease is an expression of divine wrath and is a form of just punishment; it is perceived both as a curse and as a way of purging the sinners. This idea of the divine origin of any severe epidemic was transferred from pagan classical writers such as Virgil and Seneca to Christian writers such as St. Avitus, Rufinus of Aquileia, and Sigebertus of Gembloux, and later on Christian soil became widespread in the association of specific diseases with individual saints who acted as patrons of the sick and could perform miraculous healings. The adjective is the more unstable of the two elements in the phrase, which is why most of the variations seen over the centuries affect *sacer* and not *ignis*. The reason for this is that fire is connected by association with visible phenomena, whereas *sacer* affects the concept of disease itself and ideas about the causative agents of diseases change over time.

We observe different types of substitutions in medical and non-medical sources regarding the phrase *ignis sacer* in its integrity as a phraseological unit. On the one hand, there are non-medical sources that, based on descriptions of real epidemics, create a fictional narrative in which the disease is named with a similarly constructed binomial phrase that has a different lexical composition and a substitution of one or both elements, but semantically overlapping with *ignis sacer*: for example, *flamma latens* (Ovid., *Met.*, VII.554) or *sacro morbo* and *fervida pestis* (Luc. *Phars.*, VI, 96-97). This type of similarly formed phrase is found in sources at the earliest stage of the development of the phrase (c. 1st century), when *ignis sacer* had not yet established its phraseological status outside technical literature. We see the same phenomenon in the latest stage – in the period of disintegration of *ignis sacer* as a phraseological unit. There are variations in its use as early as the 7th century, but alternative phrases to *ignis sacer* multiply notably after the 11th century. The substitution of other figures of speech in the earliest Latin non-medical texts which depict epidemics is explained by the intense transfer of imagery rather than information since Ovid and Lucan were not describing a real disease but creating a purely literary fiction. In their case, the connection to the divine is repeatedly and explicitly stated elsewhere in the text.

In medical sources, the phrase *ignis sacer* replaces terms from the Greek medical tradition, in which one finds a developed philosophical concept of the aetiology of diseases in general. In most of these sources, *ignis sacer* is identified with the concepts behind the Greek lexemes ἐρυσίπελας or ἔρπηξ. The genre of medical literature naturally implies some attempted treatment, even if the disease could have a lethal outcome, and the possible complications are presented undramatically. This gives the often deceptive impression that non-medical sources describe much more deadly diseases.

In editions of medical sources, there are relatively few deviations from what is now established as the term *ignis sacer*, but variations are noticeable in manuscripts, which in most cases have been rejected by publishers and classified as miswritings (*lapsus calami*). The substitution of *acer* or *ager* for *sacer* has been explained by publishers as an omission of the first letter by the copyist, or as purely graphic confusion between C and G. Wickersheimer, who studied medical manuscript collections, believed that these errors were too numerous to be accidental (Wickersheimer 1956: 646), but with a more detailed analysis of the sources the present study demonstrates that they are indeed most likely copyist errors that originated in translations of Dioscorides and, because of the enormous influence of this work across all phytotherapeutic collections, these mistakes also spread into other sources.

By the 10th-11th centuries, alternative phrases occur in non-medical sources, formed in a similar manner and preserving and even complementing the general semantic direction set by

*sacer*, such as *clades pessima* (worst plague), *ignis occultus* (hidden fire) (Rodulf. Glab., Hist., II. 7, 14), *occulta Dei iuditio* (hidden divine judgement), *divina ultio* (divine punishment), *mortifer ardor* (deadly fever) (Rodulf. Glab., Hist., V. 1. 16). Alongside the adjective *sacer* epithets like *terribilis* (terrifying), *irremediabilis* (incurable), *invisibilis* (invisible) also see usage; the phrase *divina ultio* (divine punishment) (Andr. Flor. Miracula. S. Benedicti. IV. 1), *pestilentia ignis* (plague of fire), *invisibilis ignis* (invisible fire) (Ademar. Cab. Chron. III. 35) appear as well. These sources exemplify the tendency for an increasing number of phrases naming "fiery" diseases to emerge, especially in chronicles, sermons, and lives of saints after the 11th century.

### 3.2. Phraseologism or polynomial medical term?

The criteria used to establish whether a phrase is indeed a phraseologism, as introduced by Andrzej Bogusławski, are applied to demonstrate that *ignis sacer* functions as a phraseologism in non-medical texts, where it has additional emotional connotation, and as a polynomial term in medical sources. Bogusławski's criteria are applied according to the model used by Iliana Genev-Puhaleva (Genev-Puhaleva 2016: 120-129).

The following phraseological criteria by Boguslavsky are considered:

- Reproducibility or persistence of phraseological units, i.e. they must be reproduced as ready-made entities in each speech act, rather than being composed by the author in a specific situation, as is the case in ordinary text generation.
- Idiomaticity, which reflects the formation of the word combinations perceived as phraseologisms – they must be created either by metaphoric or by metonymic transformation.
- Phraseologisms are polynomial and are constructed from parts that individually can occur in other combinations (Genev-Puhaleva 2016: 122), but at the same time they are "semantically monolithic or have a meaning that is not summative" (Genev-Puhaleva 2016: 124), i.e. what they denote is not the result of the simple mechanical gathering of the denotative meanings of the components of the phraseological unit, but can be differentiated as a separate semantic entity.
- Divisibility – i.e. phraseologisms can be divided into two parts and other words or whole phrases can be inserted between them, and on the other hand they can adapt morphologically to the context, i.e. they possess non-global modifiability or divisibility (Genev-Puhaleva 2016: 124). Polynomial and, respectively, binomial terms meet this requirement.
- The criterion of expressiveness is the only one which does not appear simultaneously applicable to phraseologisms and polynomial terms (Genev-Puhaleva 2016: 126).

The dissertation discusses in detail how the above criteria apply to the uses of *ignis sacer* in medical and non-medical texts. The latter criterion of expressiveness is the only one that cannot be applied to medical sources since a purely denotative usage is observed in them and *ignis sacer*

functions as a binomial term. In non-medical texts, however, the criterion of expressiveness is observed, so there *ignis sacer* can be defined as a phraseologism.

There is reason to consider the two main groups of sources as two separate, albeit intertwining, lines of development that must be traced separately. Among medical writers, there are those who are influenced by Virgil and Lucretius, and in authors like Rufinus of Aquileia we definitely observe some knowledge of the medical tradition. Such influences, however, travel across the two traditions much more slowly than the direct links between earlier and later authors within the same tradition; we only begin to observe a significant mingling of traditions after the 11th century. It is then when *ignis sacer*, overladen with accumulated semantic meanings, reaches the limit beyond which it can no longer function as a term. This leads to its desemanticisation and its gradual disintegration into multiple alternative terms.

### 3.3. Formation and development of the phrase *ignis sacer* in poetic and prose non-medical sources (1st century BC – 11th century)

All non-medical sources describe epidemic manifestations of disease. Some of these works are influenced by actual historical events, while others are purely fictional and the result of an exchange of imagery, presenting epidemic events typical of tragedy and epic *loci communes*.

The thesis provides a retrospective diagnosis of those descriptions in non-medical sources that can be linked to real events and feature sufficiently detailed symptom descriptions.

Author, timing and title	Historical event described	Probable identification of <i>ignis sacer</i>
Titus Lucretius Carrus (1st c. BC), <i>On the Nature of Things</i>	The epidemics of Athens (430 BC).	Measles with possible secondary infection from typhoid fever
Publius Vergilius Maro (1st c. BC), <i>Georgics</i>	The Noric Cattle Plague (1st century BC or earlier)	Anthrax
Publius Ovidius Naso (43 BC. – 17 AD.), <i>Methamorphoses</i> <sup>4</sup>		Literary fiction
Lucius Annaeus Seneca the Philosopher (4 BC – 65 AD), <i>Natural Questions, Oedipus</i>	An echo of the epidemics of Athens (430 BC).	Literary fiction

<sup>4</sup> Alternative phrase – *flamma latens*.

<b>Author, timing and title</b>	<b>Historical event described</b>	<b>Probable identification of <i>ignis sacer</i></b>
Mark Anaeus Lucan (1st c.), <i>On the Civil War</i> <sup>5</sup>	The siege before the battle of Dirachium in 48 BC.	No identification due to insufficient description of symptoms and contradictions with other sources
Hosidius Geta (2nd c.), <i>Medea</i>		Mythological use for sacrificial fire and curse
Rufinus of Aquileia (345-410), <i>Church History</i>	A probable epidemic in the eastern Roman Empire in 312/313.	Smallpox
Caelius Sedulius (5th c.), <i>Hymns</i>		Divine punishment
Alcimus Ecdicius Avitus (c. 460 – 518), <i>On the Events of Spiritual History</i>	Literary description of the Fifth Plague of Egypt	No identification
Haymo of Halberstadt (9th c.) <i>Epitome of Sacred History</i>	A probable epidemic in the eastern Roman Empire in 312/313.	Smallpox
Andrew of Fleury (9th c.), <i>The Miracles of Saint Benedict</i>	An epidemic in the city of Limoges in Aquitaine in 994.	Ergotism
Sigebert of Gembloux (9th c.), <i>Chronicle</i>	An epidemic in Lorraine in 1089.	Ergotism

### 3.4. Development of *ignis sacer* as a term in specialized medical literature (1st – 11th century)

The described symptoms are analysed, the identifications given in the secondary literature, where available, are compared, and the most likely range of diseases named with *ignis sacer* is outlined. For authors who described few or no symptoms, a comparative analysis of the combination of therapeutic ingredients is used to identify their sources and a possible identification is proposed.

**Aulus Cornelius Celsus** (1st c.), *On Medicine* – most likely: eczema, a cutaneous form of syphilis; very likely: psoriasis or cutaneous tuberculosis, pyoderma; cannot exclude: dermatophytosis, impetigo; can exclude: erysipelas, ergotism, herpes zoster, anthrax, measles and other acute viral eruptive fevers.

<sup>5</sup> Alternative phrases – *morbis sacer* and *fervida pestis*.

**Scribonius Largus** (1st c.), *On the Compounding of Medicines or Prescriptions* – most likely: erysipelas, cellulitis, erysipelalous angina, infection after a wound or puerperal fever; cannot exclude eruptions due to viral fevers such as measles; can exclude: herpes zoster and anthrax.

**Lucius Junius Moderatus Columella** (1st c.), *On Agriculture* – Sheeppox or anthrax.

**Pliny the Elder** (1st c. ), *Natural History* – most likely: erysipelas, erysipelalous angina, cellulitis, infection after a wound with another causative agent, herpes zoster, pyoderma; less likely: eczema, cutaneous form of syphilis, measles, urticaria (from cold exposure, from overheating, from excessive sweating), contact dermatitis, typhoid fever; cannot exclude: allergic reactions, chemical burns and sunburns, psoriasis, cutaneous tuberculosis, dermatophytosis, impetigo, seborrheic dermatitis, puerperal fever; can exclude: anthrax and ergotism.

**Pseudo-Pliny** (3rd c.), *Pliny's Three Books on Medicine* – same identification as in Pliny the Elder.

**Gargilius Martial** (3rd c.), *On Gardens* – same identification as in Pliny the Elder.

**Quintus Serenus Samonicus** (3rd-4th c.), *Medical Book* – most likely: eruptions in contagious diseases such as smallpox or measles, severe forms of erysipelas, cellulitis or herpes zoster, serious inflammation after a wound accompanied by general fever; can exclude: diseases that do not affect the general condition of the body (eczema, psoriasis, cutaneous syphilis, cutaneous tuberculosis, pyoderma), as well as those that do not apply to Pliny the Elder (anthrax and ergotism ).

**Pseudo-Apuleius** (Apuleius Platonicus) (4th-5th c.), *Herbarium of Apuleius Platonicus of Madaura* – the same identification as in Pliny the Elder.

**Sextus Placidus** (4th c.), *Book of Sextus Placidus of Papyra on the Medicines Derived from Animals, Livestock, and Beasts or Birds* – likely: erysipelas, cellulitis, herpes zoster; cannot exclude: eruptions in viral infections such as smallpox and measles; can exclude: anthrax or necrotic ulcers.

**Theodorus Priscianus** (4th-5th c.), *Available Medicines* – most likely: severe forms of erysipelas, erysipelalous angina, cellulitis, complications such as abscesses; cannot exclude: smallpox and measles; can exclude: herpes zoster and anthrax, eczema, seborrheic dermatitis, psoriasis, and the whole scope of diagnoses in Celsus.

**Caecilius Aurelianus** (4th-5th c.), *On Acute and Chronic Diseases* – treats *ignis sacer* as a symptom, probably in the sense of erysipelalous angina in acute diseases and psoriatic arthritis in chronic ones; can exclude: anthrax, ergotism, measles, or smallpox. When translated, it is more appropriate to render periphrastically with "redness and edema" in this source.

**Cassius Felix** (5th c.), *On Medicine* – most likely: erysipelas, cellulitis, erysipelatos angina, infection after a wound of varied origin; cannot exclude: measles, smallpox, cutaneous tuberculosis, or lupus; can exclude: ergotism, anthrax, eczema, psoriasis, dermatophytosis, herpes zoster, seborrheic dermatitis.

**Marcellus Empiricus** (5th c.), *On Medicines* – most likely: erysipelas, cellulitis, infection after a wound or puerperal fever; can exclude: ergotism, anthrax, and herpes zoster, as well as the range of diseases in Celsus.

**Pseudo-Dioscorides** (5th-5th c.), *On Female Herbs* – likely: erysipelas, cellulitis, infection after a wound; can exclude: ergotism, probably also anthrax, necrotic complications, herpes zoster, dermatophytosis and seborrheic dermatitis.

**Dioscorides Lombardus** (6th-10th c.), *An Epistle of Dioscorides* – usually superficial or deep skin inflammations after a wound such as erysipelas and cellulitis; cannot exclude: eruptions caused by viruses such as measles or typhoid fever; can exclude: anthrax, herpes zoster, ergotism, cutaneous tuberculosis, eczema, psoriasis, etc.

**Isidore of Seville** (6th-7th c.), *Etymologies* – likely: erysipelas, cellulitis; can exclude: herpes zoster, anthrax, ergotism, viral diseases in which the eruption is preceded by fever.

**Pliny Valerian** (7th c.), *Five Books on the Medicine of Gaius Pliny Secundus* – despite a few untraced passages, the same identification as in Pliny the Elder, Pseudo-Pliny, and Gargilius Martialis.

**Pseudo-Galen** (7th c.), *The Alphabet of Galen* – most likely: superficial and deep skin bacterial infections such as erysipelas, cellulitis, infections after a wound, necrotizing ulcers; cannot exclude: cancerous skin manifestations, eruptions caused by viruses such as herpes, chicken pox, measles, etc.; can exclude: ergotism.

**Benedict Crispus** (7th c.), *Little Book of Medicine* – same identification as in Serenus Samonicus.

**Pharmacopoeia of Lorsch** (VII c. ) – most likely: erysipelas, cellulitis, infection after a wound with another causative agent, herpes zoster, pyoderma; less likely: eczema, cutaneous syphilis, urticaria, contact dermatitis, typhoid fever; cannot exclude: allergic reactions, chemical burns and sunburns, psoriasis, cutaneous tuberculosis, dermatophytosis, seborrheic dermatitis; can exclude: anthrax, ergotism, measles, smallpox.

**Codex Sangallensis 44** (9th c.) – most likely: erysipelas, cellulitis, or other general inflammation following a wound with necrotic complications.

**Odo of Meung** (Macer Floridus) (XI c. ), *On the Medicinal Properties of Herbs* – most likely: erysipelas, cellulitis, superficial or deep skin inflammations after a wound, and infections

caused by other agents; can exclude: herpes zoster, anthrax, ergotism, seborrheic dermatitis, psoriasis, cutaneous tuberculosis, tertiary syphilis, smallpox, measles and typhoid fever.

#### 4. Identification of the substances and analysis of the therapy associated with *ignis sacer*

##### 4.1. Therapeutic substances of plant origin.

Within the compiled corpus of sources, the phytonyms are affiliated with 100 individual plant taxa (or a little more, assuming that behind some phytonyms there are sometimes two equally possible identifications, as long as at least two plants are used under the same name and for the same purposes, as is the case, for example, with different species of reed). The close affinity of plant species implies that they contain similar biologically active substances, which determines their similar use, in which case a more precise species identification is not necessary. The passages mentioning the application of each plant for the treatment of *ignis sacer* and the name it occurs under are indicated in the text of the dissertation. References to phytophagic passages, most often from Pliny and Dioscorides, are highlighted. The secondary literature on which identifications are based is always referenced. Illustrations from the manuscripts are appended where necessary and possible. Not all plants are discussed in detail. Several of the more controversial affiliations in the secondary literature are expanded upon as indicative of the difficulties that may arise in such studies. These case studies serve as an example of the process of affiliation applied to all other phytonyms considered.

##### Identified medicinal plant taxa:

<i>Artemisia absinthium</i> L.	<i>Chenopodium</i> sp.
<i>Vachellia nilotica</i> (L.) P. J. H. Hurter & Mabb.	<i>Helichrysum sanguineum</i> (L.) Kostel.
<i>Conium maculatum</i> L.	<i>Commiphora mukul</i> Engl.
<i>Aeonium arboreum</i> Webb & Berthel.	<i>Commiphora africana</i> (A. Rich.) Endl.
<i>Sempervivum tectorum</i> L.	<i>Beta vulgaris</i> L.
<i>Allium sativum</i> L.	<i>Brassica oleracea</i> L.
<i>Aloe vera</i> (L.) Burm.f.	<i>Teucrium chamaedrys</i> L.
<i>Alkanna tinctoria</i> Tausch.	<i>Teucrium lucidum</i> L.
<i>Anchusa officinalis</i> L.	<i>Daphne oleoides</i> Schreb.
<i>Apium graveolens</i> L.	<i>Chelidonium majus</i> L.
<i>Aristolochia</i> sp.	<i>Cicer arietinum</i> L.
<i>Arundo donax</i> L.	<i>Ricinus communis</i> L.
<i>Phragmites australis</i> (Cav.) Steud. ex Steud.	<i>Cinnamomum</i> sp.
<i>Atriplex</i> sp.	<i>Carthamus tinctorius</i> L.

<i>Citrullus colocynthis</i> (L.) Schrad.	<i>Punica granatum</i> L.
<i>Lagenaria siceraria</i> (Molina) Standl.	<i>Malva sylvestris</i> L.
<i>Coriandrum sativum</i> L.	<i>Mandragora</i> sp.
<i>Umbilicus rupestris</i> (Salisb.) Dandy	<i>Marrubium vulgare</i> L.
<i>Crocus sativus</i> L.	<i>Mentha</i> sp.
<i>Cupressus sempervirens</i> L.	<i>Mercurialis annua</i> L.
<i>Lawsonia inermis</i> L.	<i>Panicum miliaceum</i> L.
<i>Convolvulus scammonia</i> L.	<i>Sorghum bicolor</i> (L.) Moench
<i>Sambucus ebulus</i> L.	<i>Commiphora myrrha</i> Engl.
<i>Eryngium campestre</i> L.	<i>Myrtus communis</i> L.
<i>Eryngium maritimum</i> L.	<i>Nardostachys jatamansi</i> (D. Don) DC.
<i>Trigonella foenum-graecum</i> L.	<i>Olea europaea</i> L.
<i>Dryopteris filix-mas</i> (L.) Schott.	<i>Origanum vulgare</i> L.
<i>Glaucium corniculatum</i> (L.) Curtis.	<i>Opopanax hispidus</i> Griseb.
<i>Ferula marmarica</i> Asch. & Taub.	<i>Papaver somniferum</i> L.
<i>Hedera helix</i> L.	<i>Papaver hybridum</i> L.
<i>Heliotropium europaeum</i> L.	<i>Tanacetum parthenium</i> (L.) Sch.Bip.
<i>Helleborus</i> sp.	<i>Potentilla reptans</i> L.
<i>Parietaria officinalis</i> L.	<i>Lycopus europaeus</i> L.
<i>Hordeum distichon</i> L.	<i>Arctium lappa</i> L.
<i>Hordeum vulgare</i> L.	<i>Petroselinum crispum</i> (Mill.) Fuss.
<i>Micromeria graeca</i> (L.) Benth. ex Rchb.	<i>Piper nigrum</i> L.
<i>Hyssopus officinalis</i> L.	<i>Plantago major</i> L.
<i>Cichorium intybus</i> L.	<i>Plantago lagopus</i> L.
<i>Isatis tinctoria</i> L.	<i>Plantago lanceolata</i> L.
<i>Lactuca serriola</i> L.	<i>Polygonum aviculare</i> L.
<i>Lactuca virosa</i> L.	<i>Allium ampeloprasum</i> L.
<i>Lens culinaris</i> Medik.	<i>Portulaca oleracea</i> L.
<i>Vicia lens</i> (L.) Coss. & Germ.	<i>Rhamnus cathartica</i> L.
<i>Lemna minor</i> L.	<i>Rhamnus oleoides</i> L.
<i>Lilium candidum</i> L.	<i>Rhamnus saxatilis</i> Jacq
<i>Linum usitatissimum</i> L.	<i>Paliurus spina-christi</i> Mill.
<i>Echium italicum</i> L.	<i>Rosa</i> sp.
<i>Cydonia oblonga</i> Mill.	<i>Rubus idaeus</i> L.

*Ruta graveolens* L.

*Ruta chalepensis* L.

*Ruta montana* Mill.

*Juniperus sabina* L.

*Ferula persica* Willd.

*Sambucus nigra* L.

*Drimys maritima* (L.) Stearn

*Reseda* sp.

*Tordylium officinale* L.

*Solanum nigrum* L.

*Pistia stratiotes* L.

*Lavandula stoechas* L.

*Pistacia terebinthus* L.

*Thapsia garganica* L.

*Astragalus* sp. (*A. gummifer* Labill.)

*Triticum vulgare* Vill.

*Triticum turgidum* L.

*Triticum durum* Desf.

*Triticum compactum* Host.

*Boswellia sacra* Flück.

*Vitis vinifera* L.

#### 4.2. Other therapeutic substances of plant origin

- resin (pine), pine tar (*Pinus halepensis* Mill.), bitumen (ground tar)
- gum
- bread

#### 4.3. Therapeutic substances of animal origin

- bee products: beeswax, honey
- dairy products: goat's milk and cheese, sheep's milk and butter
- eggs: boiled/raw whole egg, yolk, white
- animal fat: pig/bear/goose fat, goat/calf/buffalo/lamb suet, lanolin
- lamb bile
- water sponge
- fish products: fish sauce (garum), ash from salted sheatfish heads (*Silurus glanis* L.)
- antlers, hair, skin: deerskin shavings, burnt goat horn, burnt ox horn, shed snakeskin, dried snake head, ash from the hair of a woman
- whole live animals: rain worms (*Lumbricus terrestris* L.), a live frog, a cricket together with the soil from its burrow
- blood: menstrual blood, blood from a tick, turtle blood
- manure: calf/cow fresh manure, sheep/lamb manure
- urine

#### 4.4. Therapeutic substances derived from tree fungi

- *Laricifomes officinalis* (Vill.) Kotl.
- *Laetiporus sulphureus* (Bull.) Murrill

#### 4.5. Therapeutic substances of inorganic origin

- fresh/ spring/ rain/ water, cistern water
- sea water, brine
- salt
- Kimolian clay (bentonite), powdered pottery
- iron and iron compounds: rust, red ochre
- copper and copper compounds: “copper blossom”, copper flakes, copper patina resulting from the use of a copper pot
- sulphur compounds: unburnt sulphur; arsenic sulphides (auripigment and realgar); slag (potassium-aluminium slag, potassium slag or alunogen); copper or iron sulphate; chalcopyrite
- lead and lead compounds: litharge (lead monoxide PbO), white lead (lead carbonate or basic lead carbonate)
- soda (natron, bicarbonate of soda, caustic soda)
- zinc oxide

#### 4.6. Trends emerging in therapy

It is clear from the therapies examined that plant substances tend to predominate, though this may not be the case within the writings of some individual authors (see Fig. 2).

Among the 20 most common substances, the distribution between plant and non-plant medicines in origin is relatively even, 11 plants to 9 categories of other products (see Fig. 3.). Of the leading other products that emerge, some play the role of extractants, consistency or viscosity enhancers, binders and/or diluents, e.g. all vine products such as vinegar, wine, grape juice, all olive products, especially olive oil, and also bread and roasted barley flour.

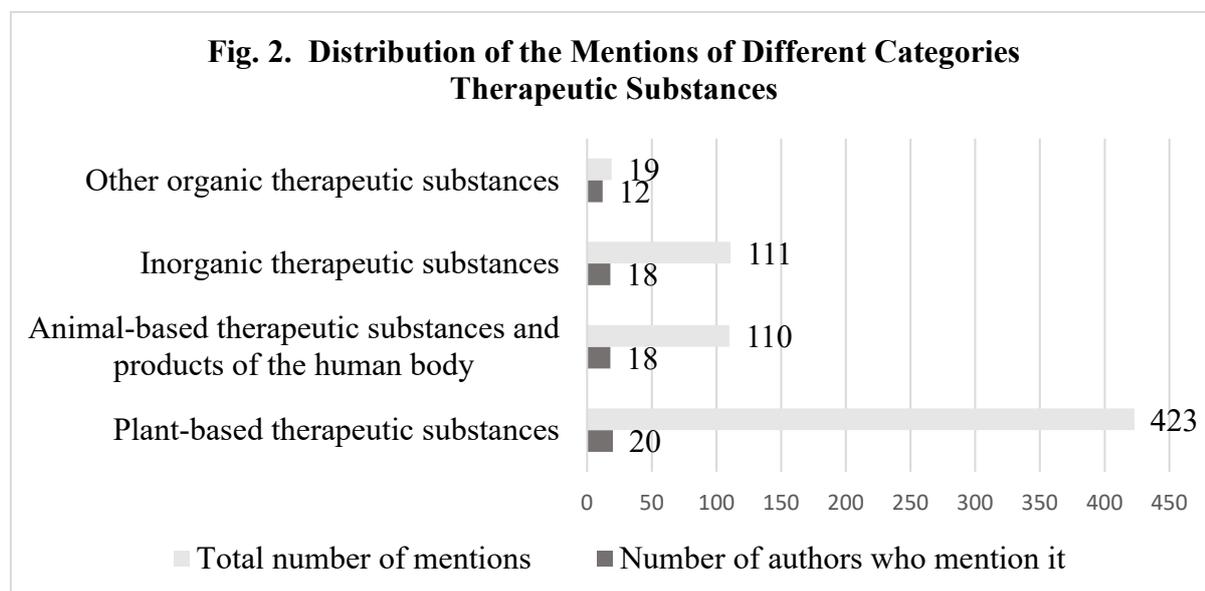


Fig. 3. The 20 most commonly used products in therapeutic practice for the treatment of *ignis sacer*

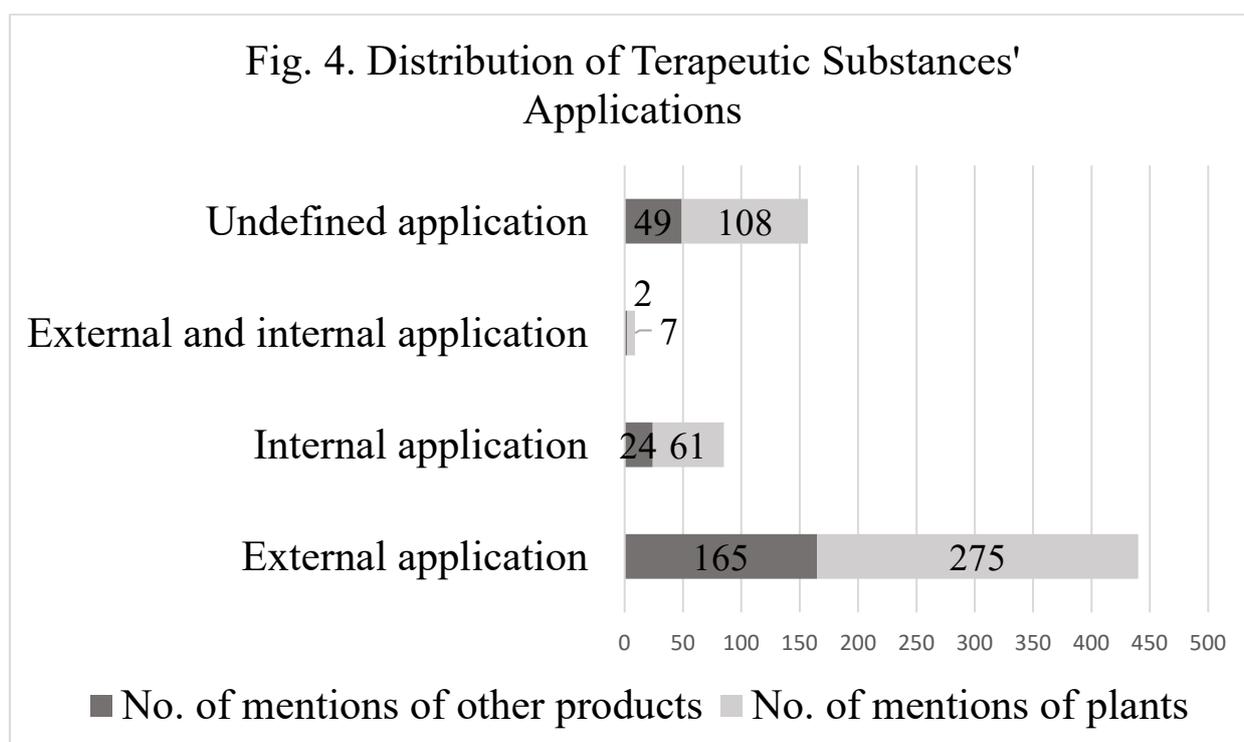
Therapeutic product	The number of authors who have mentioned it	Total number of mentions in sources
<i>Vitis vinifera</i> L.	17	81
<i>Olea europaea</i> L.	15	42
lead compounds	14	35
honey	13	23
sulphur compounds	12	20
<i>Ruta graveolens</i> L.; <i>R. chalepensis</i> L.; <i>R. montana</i> Mill.	12	14
Kimolian clay (bentonite)	10	15
eggs	9	21
<i>Beta vulgaris</i> L.	9	12
<i>Plantago major</i> L.; <i>P. lagopus</i> L.	9	11
sweet water	8	18
<i>Rosa centifolia</i> L.; <i>Rosa gallica</i> L.	8	16
<i>Coriandrum sativum</i> L.	8	9
bread	8	9
<i>Hordeum vulgare</i> L.	7	20
<i>Solanum nigrum</i> L.	7	12
bees' wax	7	7
<i>Crocus sativus</i> L.	6	7
<i>Mentha</i> sp.	6	6

Therapeutic product	The number of authors who have mentioned it	Total number of mentions in sources
tar, bitumen, resin and rubber	6	8

#### 4.7. Therapeutic procedures

The following therapeutic procedures are registered:

- Surgical interventions for the treatment of *ignis sacer*: bloodletting; scarification; drainage of pus by incision or puncture; amputation of limbs;
- Therapy affecting the digestive system: special diet; abstinence from food; agents that remove yellow bile; intake of more fluids; administration of purgatives; administration of liquid emetics.
- Physiotherapy: medicinal baths; carrying on a recliner; bed rest.
- Magical practices: ritual extraction of blood from a turtle; apotropaic practice against *ignis sacer*, in which a cricket, along with soil from its burrow, is crushed between the palms; treatment by touch by a menstruating woman; application of blood extracted from a tick.
- Application of transdermal therapeutic agents. The majority of the proposed therapeutic substances are designed specifically for topical external application (see Fig. 4.). Those for internal use are primarily purgatives. Prescriptions which do not indicate a route of administration often contain indirect markers that suggest external use.



## 5. Conclusion

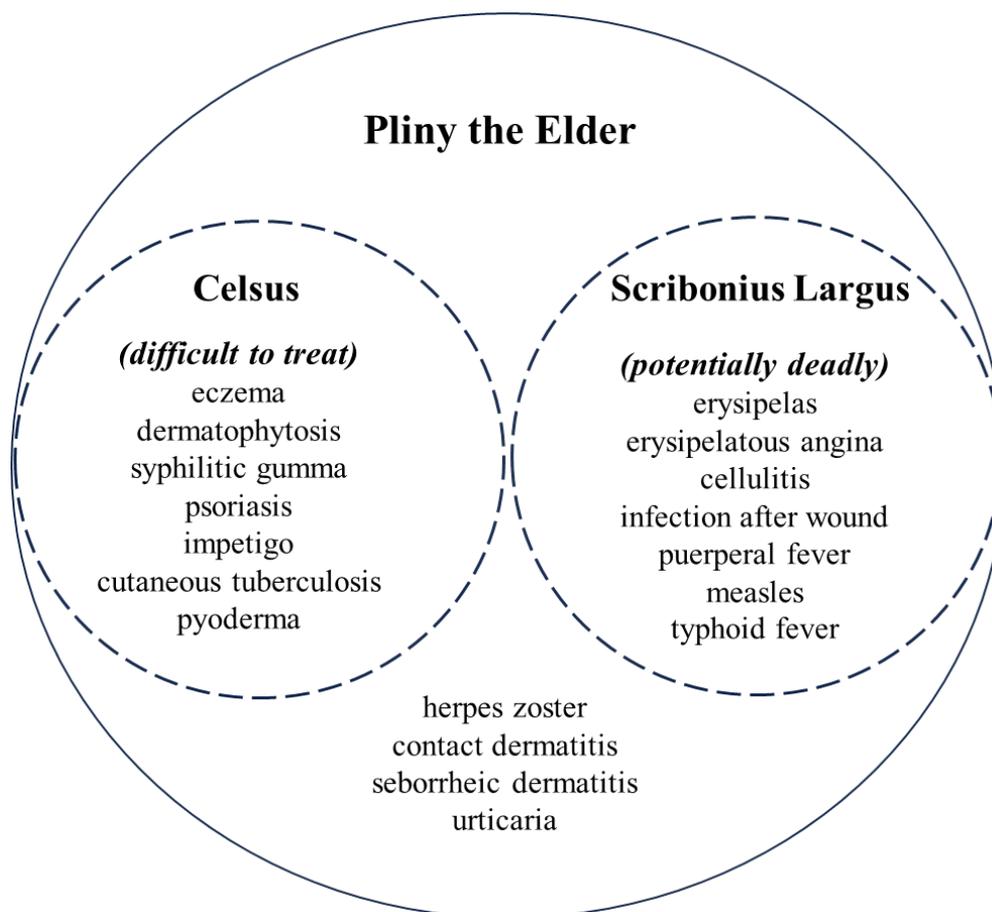
The outlined retrospective diagnoses of the diseases or symptom complexes known as *ignis sacer* between the 1st century BC and the 11th century, proposed here based on the symptoms described or the combination of therapeutic ingredients applied in the sources examined, enable the tracing of different threads in the evolution of the phrase *ignis sacer* over nearly twelve centuries. These threads sometimes evolve independently, in parallel to one another, and at other times influence each other or are influenced by a common external factor. The relatively late point at which the phrase becomes established as a medical term in the ancient technical literature, and as a phraseologism in the non-medical literature, indicates that there are likely earlier sources, which have not survived, where the first instance of *ignis sacer* was recorded. There is also the question of interference between the two traditions – the literary and the medical – and the effects of additional factors that may have influenced both. The examples of *ignis sacer*'s terminological completeness in the writings of Celsus, Scribonius of Largus and Pliny the Elder are too numerous to be explained solely by the influence of the Roman authors through whom the phrase is first attested – Lucretius and Virgil. We should therefore assume the presence of some missing link, most likely a medical text written during those centuries which separate the Hippocratic corpus (5th-4th centuries BC) from Lucretius (1st century BC). In such hypothetical text or texts, *ignis sacer* was most probably introduced as a term coined after the pattern of *morbis sacer*. Hippocrates remarks that the *ἰερά νόσος* was invented by charlatan physicians who wished to shift the responsibility for their eventual failure to the divine (Hipp., Morb. Sacr., I. 2). His observation is not without basis, and we may assume that it was the difficult-to-treat conditions characterized by cutaneous manifestations that were named with *ignis sacer*. Interpretations of the phrase in various sources in the 1st century BC and the 1st century AD convey the impression that *sacer* is used to refer either to life-threatening conditions, i.e. diseases that have a high mortality rate, sometimes of an epidemic nature, or to such conditions which, although they do not appear to be life-threatening, have a long course or are chronic and cannot be declared cured. The metaphorical use of *ignis*, on the other hand, reflects common symptomatic features (skin redness, fever, etc.) of multiple diseases associated with *ignis sacer*. The conditions thus suggested by the two elements of the phrase – e.g. diseases with certain cutaneous manifestations (*ignis*) which defy a physician's treatment and thus invite a justification citing the divine character of the affliction (*sacer*) – can overlap with an exceedingly, often bafflingly wide range of nosological entities. Lucretius, in whose poem the use of *ignis sacer* as a stable phrase is first attested, appears to have chosen it because it most closely matches the image of a disease that is perceived by men as caused by the gods, as sudden as a volcanic eruption, and as impossible to contain as the elements of

nature. He aims to show that man's fear that disasters beyond his control are sent as divine punishment just makes them harder to bear. The description of the plague in Athens in *De Rerum Natura* is so evocative that it takes on a life of its own outside the context of the poem. This extrapolation of epidemiological imagery, which finds its clearest expression in the name *ignis sacer*, also explains why texts which are close in time of writing use the phrase to name several entirely medically distinct conditions. In Virgil's *Georgics*, in the description of the Noricum cattle plague, *ignis sacer* as a phraseologism appears immediately after the rhetorical climax in the episode, in which the whole complex of symptoms described is explained by the curse and punishment of the gods. Hence, in every author after Virgil, *ignis sacer* is associated with the concept of an epidemic that has a punitive character, even though Virgil does not conceptualize the use of *ignis sacer* as a pathonym. Several highly hyperbolized literary constructions also emerge – some are (semi-)fictional descriptions of epidemics, sometimes inspired by real events (Lucan). Some accounts draw on the common trope (*loci communes*) in the historical transmission of such disasters and uncritically combine the symptoms of diseases with different causative agents (Ovid, Seneca). In the formative stage of the phraseologism in non-medical literature, semantically equivalent paraphrases of *ignis sacer* (Ovid and Lucan) are also found, suggesting that it has not fully taken hold as a stable phrase. In this period, the non-medical use of *ignis sacer* is found exclusively in poetry, with traditional means of expression to convey apocalyptic phenomena, and hypotheses about the diseases it names range from measles and anthrax to non-existent epidemics as literary fiction.

In parallel, medical sources from the 1st century onwards show an extraordinary variety of possible identifications of the disease(s) referred to by *ignis sacer*. This thesis divides these mentions into two distinct semantic circles, one deriving from the work of Scribonius Largus and the other – from the treatise of Celsus. These circles have no intersection, which may seem disconcerting, but we can assert that each author chose to follow a different logic. Scribonius describes the more dangerous, deadly diseases insofar as he uses *ignis sacer* instead of ἐρυσίπελας, and in Hippocrates' corpus this is a serious, often deadly, condition. Celsus, on the other hand, as he himself writes, uses *ignis sacer* to refer to diseases that are not deadly, but are persistent: “All cases of sacred fire, although the least dangerous of the ulcerations which spread, are the most difficult to relieve” (Cels., Med., V. 28. 4 C). These two distinct semantic circles seem to have been mechanically united and expanded by Pliny the Elder, who strives above all for comprehensiveness (see Fig. 5) and substitutes many ancient Greek medical terms with *ignis sacer*, without concern for the contradictions that arise in the text. Thus, at the very beginning of the history of *ignis sacer*, several key issues become salient: the interference between the two

traditions in which the phrase is attested, developing in parallel – the literary and the medical; the preconditions for subsequent semantic transformations in the literary tradition through metaphorization and metonymization; and the most serious issue – the absence of a single concept (a disease) that *ignis sacer* as a linguistic unit can lexicalize. These issues predispose the subsequent contraction and expansion of the scope of *ignis sacer* as a term and the difficulty of specifying its lexical and conceptual structure in different eras.

**Fig. 5. The overlapping identifications of the term *ignis sacer* in semantic circles delineated by Pliny the Elder, Scribonius Largus and Celsus**



Not all authors studied here can be unequivocally assigned to one tradition or the other. Columella, for instance, sits midway between medical and non-medical literature, insofar as his key topics are agriculture and husbandry and his sources include both didactic poems such as that of Virgil and specialized works by Greek or North African authors. He associates phraseology borrowed from Virgil with a disease (most probably sheeppox, though anthrax cannot be ruled out) which he says is otherwise known among shepherds but fits the pattern described above: it is deadly and has a cutaneous manifestation.

The only two conditions for which there is attested use of *ignis sacer* in this period, but which remain outside the semantic field outlined by Pliny the Elder, are namely sheeppox (Columella), which affects only animals, and anthrax (Virgil), which in Latin is most often referred to as *carbunculus* and is associated primarily with the colour black. At this stage in the development of the term, the skin lesions which enter into the semantic load of *ignis sacer* are more closely associated with the red colour, which corresponds with the etymology of ἐρυθσίπελας.

After the 1st century, an absence of mentions of *ignis sacer* is observed in the sources, inasmuch as the only composition of the 2nd century that has reached us is that of Hosidius Geta. In his centon of Virgil's verses, Hosidius transitions the phrase from its use as a pathonym to a phrase referring specifically to the fire that effects Medea's vengeance. In the 3rd century, medical compilations appeared, restructuring and summarising the medical books in Pliny the Elder's *Naturalis historia* and, to a lesser extent, Dioscorides. Thus, in those sources, the usage of *ignis sacer* overlaps with the semantic field established by Pliny the Elder. In the late 3rd century, however, the scope of the term seems to have been influenced by the drastic changes in pathocenosis that occurred after the so-called "Antonine plague" (2nd century), which is thought to have been the first epidemic of smallpox in Europe. Since this new disease does not yet have a distinct name, references to it attempt to fit it into already existing medical terms, among which one suitable candidate is *ignis sacer*. Indications of this semantic neologism can be found in the poem *Liber medicinalis* by Serenus Samonicus, who, although therapeutically borrowing from Pliny, makes it clear in his brief description that he has in mind severe diseases. Samonicus's use of the term is perhaps the first instance in which smallpox is projected onto the term as an additional semantic layer without displacing older meanings. Thus, Serenus Samonicus narrows the circle of possible diagnoses yet also enriches it with the new disease. Evidence for the addition of smallpox as a semantic layer is also the history of Rufinus, who, in his translation of Eusebius, uses *ignis sacer* as a vernacular name for a disease with the same kind of symptoms.

The association of *ignis sacer* with smallpox also opens a new perspective in the study of Latin translations of Arabic sources in the 10th-11th centuries, some of which, according to Fuchs, mistakenly use *ignis sacer* to translate the Arabic *nar-farsi* (Persian fire). According to Fuchs, Constantine Africanus (11th century) in his translation of the 'Ali 'Abbas renders *nar-farsi* with *ignis sacer* and uses it as a name for smallpox (Fuchs 1834: 4-5). Assuming that from the time of Serenus Samonicus smallpox falls within the semantic field of *ignis sacer*, this translation by Constantine Africanus is not in itself inaccurate – although *ignis sacer* is not a literal translation of *nar-farsi*, they do have points of semantic intersection.

In the late 4th and early 5th centuries, a group of medical writings by African authors emerges which, although representing different medical schools, borrows nearly identical passages from the Hippocratic corpus in which ἐρυσίπελας is used. The description of *ignis sacer* given by Priscianus, like that of Serenus Samonicus, narrows the meaning to only severe diseases. Although their works are unrelated, this similarity probably reflects a general trend imposed by the appearance of smallpox.

Caelius Aurelianus, who is the only representative of the Methodist school among the authors under consideration, is also among the few who use *ignis sacer* as a symptom of another disease. He uses it to designate a bright redness as a translation of ἐρυσίπελας and ἐρυσιπελατώδης. Cassius Felix is the first to explicitly define *ignis sacer* as identical with ἐρυσίπελας, and thus officially removes a great deal of the diagnoses accumulated in Pliny and eliminates entirely the semantic circle of Celsus. The only group of diagnoses which remains is the one based on the Hippocratic corpus, i.e., the diseases included in Scribonius Largus's 1st-century composition: erysipelas, erysipelalous angina, cellulitis, post-wound infection, puerperal fever, measles, typhoid fever, and the later addition of smallpox. In the 5th century, Marcellus Empiricus borrows from Scribonius, so in keeping with the trend of the African medical writings he also narrows the scope of the term.

All these authors, whose main source directly or indirectly appears to be Hippocrates, prescribe purgatives, often also bloodletting, as therapy for *ignis sacer*. They perceive the disease as the result of some general imbalance according to the humoral theory, and accordingly do not focus on the treatment of the cutaneous symptoms. In contrast, authors who borrow primarily from Pliny and Dioscorides prescribe poultices, ointments, and salves for external application. Therefore, in later medical compendia, the prescription of purgatives to treat *ignis sacer* can be interpreted as an indicator that sources other than Pliny and Dioscorides were used. Between the 4<sup>th</sup> and 6<sup>th</sup> century, *ignis sacer* became established as the Latin equivalent of ἐρυσίπελας and this is also evident from the so-called Dioscorides Lombardus and Pseudo-Dioscorides, where *ignis sacer* translates ἐρυσίπελας and ἐρυσιπελατώδης. Isidore of Seville documents this tendency in his Etymologies, and like Cassius Felix identifies *ignis sacer* with ἐρυσίπελας (Isid., Orig., IV. 8. 4). In *De differentiis verborum*, Isidore gives *ignis sacer* as one example of the negative connotations in the meaning of *sacer*, namely "cursed" (Isid., Diff., S. 498). A century before Isidore, Caelius Sedulius (4th-5th century) in his poem *Carmen paschale* points to *ignis sacer* as the means by which God destroys troublesome tribes, and in the 5th century St. Avitus uses the phrase to refer to the Fifth Plague of Egypt. Thus, the dual nature of the religious/moral concept and the dual

semantics of the adjective *sacer*, which can be observed as early as the period of the Laws of the Twelve Tables, are reaffirmed in a Christian context.

Except for the collection of Pliny Valerian, which follows the Pseudo-Plinian medical tradition, the tendency to conceptualise *ignis sacer* as a severe illness persists in medical texts from the 7th to the 9th century and beyond. This is characteristic of Galen's *Alphabet*, which is paradoxically based primarily on Dioscorides, as well as of Benedictus Crispus, who borrows from Serenus Samonicus, and of collections such as the Pharmacopoeia of Lorsch and the Medical Formulary of St. Gallen. This period also sees an increase in the incidence of so-called “errors” in manuscripts, and specifically in medical writings, in which *sacer* is replaced by *acer* or *ager*, indicating a trend toward the conceptual rationalisation of disease aetiology. Such substitutions are not found in non-medical literary sources. In the Lorsch Pharmacopoeia, we observe an attempt to define medical terms even more clearly, to set apart the disease identified as herpes zoster and to give it a distinct name, for example as *circinum* – equivalent to *zona sacra*, etc. This is part of a general drive in science towards ever clearer and ever more discrete nomination of nosological entities.

The texts by authors such as Rufinus, Caelius Sedulius, St. Avitus, and, in the 9th century, by Heimo of Halberstadt, who abridged Rufinus, impose a lasting association between *ignis sacer* and the wrath of God, epidemics and their punitive function on Christian non-medical literature. At the same time, in medical literature and monastic compendia, the term *ignis sacer* is appropriated as a name for severe illness. The increasing cultivation and consumption of rye in the 8th to 10th centuries (Behre 1992:150) explains why accounts of epidemics of a disease identified as ergotism first appear in the chronicles. This is another case of a new pathological phenomenon requiring to be named in some way, and it is not surprising that *ignis sacer* was used alongside other loose phraseological combinations associated with fire, punishment, and damnation in the 11<sup>th</sup>-century chronicles. The first instances of *ignis sacer* being used to mean the pathonym ergotism are encountered in Andrew of Fleury's account of the miracles of St. Benedict and in the chronicle of Sigebert of Gembloux. After these first instances of the use of *ignis sacer* in this new sense, a growing number of chronicles in the 12th and 13th centuries described epidemics accompanied by loss of limbs and gangrene under the name *ignis sacer* (Fuchs 1834: 5). Unlike these chronicles, however, in medical literature in the 11th century the term had not yet changed its meaning nor added a new lexical layer, but continued to carry the meanings accumulated over the centuries as medical writings remained much more conservative and still heavily dependent on their ancient models. An excellent example of this is the pharmacological poem of Odo of Meung from the very end of the 11th century, which mainly uses Pliny and

Dioscorides through their later compilations, with the therapy chosen to correspond primarily to ἐρυσίπελας.

The meaning of *ignis sacer* as ergotism, which became established after the 12th-13th centuries, was gradually transferred to medical sources, especially to treatises on surgery, featuring detailed discussions of the specific type of dry gangrene caused by poisoning with the alkaloids of the *Claviceps purpurea* fungus. This overload of meaning, and the merging of symbolic and medical usages into a wide semantic pool, triggers the reverse process – the disintegration of *ignis sacer* as a term in medical literature; to be gradually replaced entirely by *ignis sancti Antonii*<sup>6</sup>. This religiously loaded new phrase becomes particularly popular outside of specialized medical treatises. Thus in the 15th century, we see *ignis sancti Antonii* used in the form of a curse in French in *Pantagruel*, where Rabelais vows that if readers do not believe what is written, the fire of St. Antony will burn them<sup>7</sup>.

*Ignis sacer* as a nosographic term and as a stable phrase with religious/moral implications (punishment, curse) undergoes a long and complex development in which two distinct traditions – medical and literary – are tightly intertwined, which means that it is impossible to translate this phrase in one universal manner within a given era, and sometimes even within the work of the same author.

Tracing the secondary literature for the purpose of identification of *ignis sacer* incidences in individual authors, it is striking that even where a diagnosis is offered, there is often a lack of argumentation: this is similar to a scenario where a person goes to the doctor and the doctor does not explain why he thinks the patient is sick, but simply diagnoses the illness. Since much of the early research was done by medical doctors, the identifications are often stated as diagnoses without any discussion of reasoning or whether additional sources were consulted, whether there is conflicting evidence, etc. This often does not allow for the verification of their claims. An author's natural inclination to overrecognise and overattribute the object of one's research is a typical drawback in treatises on the history of medicine in the 18th and 19th centuries. A great number of investigators searched the sources for the manifestations of precisely the object of their study, whether ergotism, erysipelas, herpes, or some other disease. This "tunnel vision" in interpreting the sources which can be seen in otherwise authoritative works has led later scholars to directly quote from this early secondary literature, but without revisiting the original sources. Just as in compilations based on Pliny the Elder, a misreading of lanolin (*oesipum*) became hyssop (*hyssopum*) and this error was multiplied across subsequent works, some errors in the secondary

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<sup>6</sup> Combinations with other names of saints are also used, but the most widespread remains St. Antony.

<sup>7</sup> „Le feu saint Antoine vous arde” (Rabelais 1920: 5).

literature, repeatedly and uncritically reproduced, eventually became common belief. Every researcher makes mistakes, so it is useful to structure research in such a way as to allow access to the source data and to specify the methods by which hypotheses are constructed. Thus, others in the field can verify and if necessary revise and build on what has been discovered so far, rather than blindly accepting previous results or starting anew. Therefore, one of the aims of this study is to collect all relevant sources, structure them and analyse them using a tool of general applicability.

The same absence of reasoning disconcerts the reader when searching for information on therapeutic constituents and especially on the affinity of plant taxa. It is exceedingly rare that any explanation is given in the source publications as to why one identification is preferred over another. Among the early 20th-century editions of Dioscorides, only Berendes stands out for attempts to argue certain cases. Working with ancient sources inevitably involves a great deal of hypothesising, but it is still proper that the reader is given the tools to judge the degree of suppositionality in any particular case.

In the identification of medicinal substances from the compiled corpus of sources from the 1st to the 11th century, it became clear that all plants and other products used in the treatment of *ignis sacer* occur in Pliny the Elder and Dioscorides<sup>8</sup>. Most often, if there are any phyto-graphic passages or descriptions of the extraction and properties of mineral substances, they occur in the works of said authors. Other sources important for identification are the works of Theophrastus, Galen, Cato, Varro, Columella, and even Vitruvius. Concerning the treatment of *ignis sacer*, along with Pliny and Dioscorides, Scribonius, who tested the effects of medicines and is known as a source for the folk medical tradition of the 1st century BC, emerges as a foundational author. Almost all other writings in the corpus just reformulate the therapeutics of these three sources to varying degrees. New prescriptions, albeit with familiar substances, occur infrequently, sometimes partially taken from Galen. The combinations proposed by Priscianus stand out as original, as do individual recipes of unclear provenance in the collection of Pliny Valerian. Additionally, we see some unusual combinations of therapeutic ingredients in the Pharmacopoeia of Lorsch. Therapy proves really useful as a tool for tracing connections between sources and as an aid in delineating the scope of medical terms, especially for authors who offer no description of pathological conditions. It is important to keep track of entire prescriptions, not just individual ingredients, noting possible substitutions in particular categories of products (e.g. bear fat substituted for beef or pork fat, bread substituted for starch, etc.). Consideration should also be given to the route of

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<sup>8</sup> There is a single plant species which remains unmatched to a Greek counterpart in Dioscorides.

administration and the pathological complexes being treated with the substance or prescription. While such tracking cannot be done automatically and the passages have to be compared one by one, the database helps narrow down the scope of possible source quotes across which a match should be sought. The identification of substances, methods of extraction, routes of administration, frequency of prescribing and terms associated with pharmaceutical preparations constitute a separate possible study area. In the context of the present study, this area has been discussed briefly in order to enable the tracing of combinations of therapeutic ingredients and demonstrate the specific approach used in the identification of medicinal remedies, plants and minerals is made.

Technologies and the opportunities they provide often evolve at a speed which renders them hard to understand and adopt as a means of working by those to whom they would prove useful. Those scientific approaches that have been in use for years seem safer and easier to work with than new and unfamiliar tools that do not intuitively seem right for one's research. As all fields of science develop, individual disciplines become more and more specialized, the fabric of scientific matter becomes more finely structured, collectively gathered knowledge penetrates deeper, and the need arises to create more and more precisely defined scientific terminology. Alongside this deepening and narrowing specialisation of researchers, the need for interdisciplinary collaboration, for forging links between branches of knowledge, is becoming ever more pronounced. Ultimately, the phenomena of our world – be they linguistic, historical, cultural or biological – are inevitably interwoven and our attempts to trace how a living system evolves and reshapes itself over time are key to forming a clear understanding of its current functions.

Tracking even just one medical term and the therapy associated with it generates a large amount of data that, once entered and organised into a system of relations, can be the starting point for various studies. It would be extremely valuable if relational databases gradually became a familiar and common tool for research work with medical terminology. This would take the possibilities for interdisciplinary research one step further, speed up and facilitate the processing and retrieval of different types of information, and create the prerequisite for any research carried out with these tools to be built upon and used by different specialists. If a sufficiently large number of diachronic studies of individual terms are carried out according to the model set out here, and the individual databases are linked into a common structure, this will at some point enable us to make individual synchronic cuts that could reveal the pathogeneses attested in a single author or in an entire period. Notwithstanding the derivative nature of much medical writing, ascertaining which pathological conditions are described and which are omitted in the abbreviated compendia and which substances are featured could reveal a great deal about the state of public health in any given era

under consideration. In this way, not only can one trace the semantic evolution of modern medical terms, but one can also arrive at hypotheses about the dominant pathogens in a given era or derive ideas for new paleopathological, ethnobotanical, or archaeomineralogical studies.

### Study Contributions

1. The study develops an interdisciplinary approach to a topic that cannot be sufficiently elucidated by either purely philological or purely natural scientific methods.
2. A corpus of sources mentioning the phrase *ignis sacer* has been compiled. For the first time, references to suggested therapy only (where a description of disease symptoms is absent) are also collated. These references have not been previously tracked and cited in the secondary literature. The corpus includes 225 citations from 30 Latin language authors and two anonymous monastic medical collections, and 45 citations from four Greek language authors. They are divided into the categories set out in the research objectives and are discussed within this framework:
  - Sources/authors, both literary and technical (medical treatises and poems), fundamental to the identification of disease as they contain descriptions of symptoms, e.g., Lucretius' *De rerum natura*, Virgil's *Georgica*, Celsus' *De medicina*, Rufinus' *Historia Ecclesiastica*, Theodorus Priscianus' *Euporiston*, Sigebert of Gembloux' *Chronicon*, etc.
  - Writings that do not contain nosography or phytography, but through the prescribed combinations of therapeutic ingredients can be traced to a source where a positive identification of the medicinal constituents and/or the pathological condition described as *ignis sacer* has been made. Such examples are Marcellus Empiricus' *De medicamentis*, Pseudo-Galen's *Alphabet of Galen*, medical compilations based on Pliny the Elder like those of Pseudo-Pliny and Pliny Valerian, medical formularies such as that of St. Gallen or the Pharmacopoeia of Lorsch, etc. This category also includes sources that feature a limited description of symptoms which alone cannot lead to an identification, but does so when combined with a tracing of the described therapy – for example, the poems *Liber medicinalis* by Serenus Samonicus and *De medicina libellus* by Benedictus Crispus.
  - Sources featuring a purely literary use of the phrase where the symptoms described are entirely fictional and do not reflect an existing historically attested medical phenomenon. The most characteristic examples in this category are Seneca the Philosopher's *Oedipus*, where the epidemic in Thebes is described, and St. Avitus' *De spiritualis historiae gestis*, a verse paraphrase of the Old Testament account of the Fifth Plague of Egypt.

3. Methodological models for the identification of plant, mineral and animal substances are proposed.
4. Methodological models are proposed for the retrospective diagnosis of the pathological conditions described under the name *ignis sacer*, and also for determining the scope of the term on the basis of therapies prescribed in authors who give scant or no description of symptoms.
5. A second supplementary corpus of quotes containing phytographic passages, methods of extraction or properties of minerals, and other pertinent information has been compiled for the purpose of identifying associated remedies. The corpus comprises about 350 quotes, mostly from Pliny the Elder's *Historia naturalis* and Dioscorides' *Materia medica*, Theophrastus' *Historia plantarum* and *De lapidibus*, but also some of Galen's writings, as well as those of Cato, Varro, Columella, Vitruvius, and others. Relevant illustrations from three Dioscorides manuscripts are also used and appended.
6. A revision of all the affiliations in the secondary literature is made, the debatable ones among them are analyzed and the most appropriate identification is chosen or an alternative one is proposed.
  - The taxonomic status of affiliated plant species has been updated.
  - A 100 plant taxa in a total of 467 medicinal uses across sources are identified.
7. Some 66 other products of diverse origin were identified, attested in a total of 265 medicinal uses and divided into 25 categories.
8. A specialized relational database – a structure to serve as a methodological tool for the storage and multifactor ordering and analysis of data related to the diachronic tracing of a medical term – is created. It can also be used to analyse data related to other medical terms.
9. In this database, all sources from the main corpus related to the phrase *ignis sacer* are logged, thus forming a specific Ignis Sacer Data Base (ISDB). In it, each source passage is inputted through a specially designed form, extracting all retrievable data into separate tables.
10. With the help of statistical analysis of the source data the phraseological status of the phrase *ignis sacer* in different groups of texts in the literary and medical tradition is determined, taking into account all relevant parameters such as genre and historical context, possible comparison with a corresponding source in Ancient Greek, syntactic or metrical position, logical and semantic structure, etc. It is concluded that *ignis sacer* functions as a binomial term in medical sources, and as a phraseologism in non-medical sources, which leads to their consideration as two distinct traditions and their parallel diachronic tracing. Thus, a model is proposed for the future analysis of other medical terms and for the resolution

of specific problems that arise during a particularly long period of the accrual of the term's scope and content, as well as in the tracing of semantic transformations within this period.

11. With the help of statistical analysis of medicinal substances featured in the passages entered in the database, the following results are obtained:

- The preponderance of different categories of therapeutic substances: plant, inorganic, animal, etc.
- The 20 most commonly used therapeutic products.
- The distribution of routes of administration of therapeutic substances

12. The original sources of prescriptions are traced where possible.

13. A glossary of 679 identified names of medicinal substances is compiled, which includes 415 Latin lexemes and 263 of their Ancient Greek counterparts.

14. Using the collected secondary literature pertaining to the established corpus of sources, as well as additional medical literature, more than 20 pathological conditions are identified as having at one time or another fallen within the semantic field of the *ignis sacer* compound. The erroneous or unfounded identifications in the secondary literature are rejected and new hypotheses are proposed and substantiated. The term is used to refer to contemporary nosological entities of diverse aetiology. These include viral diseases such as smallpox, measles, typhoid fever, herpes zoster, anthrax, sheeppox, autoimmune diseases such as lupus, eczema, psoriasis, impetigo, seborrheic dermatitis, and bacterial and fungal infections such as erysipelas, cellulitis, puerperal fever, pyoderma, cutaneous syphilis, cutaneous tuberculosis, dermatophytosis, toxicoses such as ergotism, reactions to various agents such as urticaria from cold or heat, contact dermatitis, severe allergic reactions. All these diseases have overlapping symptoms and are identified with varying degrees of certainty.

15. For the first time, the scope of the term *ignis sacer* is outlined in authors offering only a prescription of therapy. For these sources, no in-depth attempts have been previously proposed for the identification of the disease for which the therapy is intended; some have been translated into English, German, French, or Russian; others have not been translated but only published. In some cases, the translations are misleading and inaccurate, and the revision of individual passages proposed here will be helpful to researchers of these authors, such as Columella and Odo of Meung.

16. For the first time, the two distinct traditions in the development of *ignis sacer*, up to the 11th century when it is superseded by *ignis sancti Antonii*, are traced and analysed in detail.

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## **7. Some publications and contributions relevant to the dissertation topic**

### **Articles in proceedings**

1. „Challenges in making retrospective diagnosis based on written sources“ [Трудности при поставянето на ретроспективна диагноза на базата на писмени извори] – In: От черната смърт до холерата. Борбата срещу епидемиите в историческа перспектива XIV – XIX в., ред. и съст. А. Симова, А. Стоянова, Л. Кръстев, рец. проф. д-р Б. Гаврилов, доц. д-р Р. Ташева, София: УИ „Св Климент Охридски“, 2023, 149-166. (in Bulgarian, English abstract, p. 165).

2. „Ignis Sacer” in Vergil’s „Georgics“ [*Ignis sacer* в „Георгики“ на Вергилий] – In: Сборник от двадесета юбилейна национална научна сесия за студенти и преподаватели, 2022, 205-2015 (in Bulgarian, English abstract, p.205).

### **Academic journal articles**

3. „The disease as a curse or the way of a medical term“ [Болестта като проклятие или пътят на един медицински термин] – Филологически форум, том. 5, брой. 1 (9), 2019, 48-62. (in Bulgarian, English abstract, p.48)

#### Conference papers

1. Section paper, „*Ignis sacer* phraseologism or polynomial medical term“ [*Ignis sacer* фразеологизъм или многосъставен медицински термин], International Conference Cultures and Religions of the Balkans, the Mediterranean and the East, 25-26.11.2022, Veliko Tarnovo.

2. Section paper, “*Ignis sacer* in Virgil's Georgics” [*Ignis sacer* в „Георгики“ на Вергилий], National Conference: 20th Jubilee National Scientific Session for Students and Teachers, 27-28.10.2022, Pleven.

3. Section paper, „What Stands Behind the Pathonym *Ignis Sacer* in the 11th-century Latin Pharmacological Poem *De Viribus Herbarum* of Macer Floridus“, International Conference: 12-th South-East European Conference of Chemotherapy, Infections and Cancer & 32-st Annual Assembly of International Medical Association Bulgaria, 20-23.10.2022, Stara Zagora

4. Section paper, “*Acidula* in *De viribus herbarum* of Macer Floridus - Problems of Affiliation of Phytonyms in Ancient and Medieval Latin and Old Greek Sources” [*Acidula* в *De viribus herbarum* на Мацер Флоридус – проблеми при афилиацията на фитоними в антични и средновековни латински и старогръцки извори] – National Conference: Language and Science, 24-25.09.2022, Plovdiv.

5. Section paper, “The Theory of Pathocenosis and the Synthetic Approach in the History of Medicine” [Теорията за патоценозата и синтетичният подход в историята на медицината] – International Conference: From the Black Death to Cholera. The Fight Against Epidemics in Historical Perspective, XIV-XIX Centuries, 15.03.2022, Sofia

6. Section paper, “Applying a Relational Database (Microsoft Access) in Diachronic Multifactor Tracing of Latin Medical Terminology in Ancient and Medieval Sources” [Приложението на релационна база данни (Microsoft Access) за диахронно многофакторно проследяване на латинска медицинска терминология в антични и средновековни извори] – ADUCE Readings: Logos, Dogma, Fantasy, 02-03.04.2021, Sofia

7. Section paper, “*Ignis sacer* - what are the curses with which the divine burns us?” [*Ignis sacer* – кои са проклятията, с които ни изгаря божественото?], Third International Philological Forum for Young Researchers, 15-17.11.2018, Sofia

8. Poster, „Species of the genus *Artemisia* in Macer Floridus (11th – 12th century AD)“, International Scientific Conference: Plant Diversity Towards Society: Sociocultural dimensions and interdisciplinary projections, 21-22.11.2019, Sofia.
9. Poster, „Healing plants used for the treatment of *ignis sacer* from 1st century BC to 11th century AD“, International Scientific Conference: Plant Diversity Towards Society: Sociocultural dimensions and interdisciplinary projections, 21-22.11.2019, Sofia.
10. Section paper, Edible And Medicinal Plants In The Cloister-Gardens Of Western Europe (8th And 9th Century Ad), International Scientific Conference: Plant Diversity Towards Society, 23-25.10.2015, Sofia