
Venoms and Poisons in 13th-century Castilla

Science, Culture and Tradition

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Introduction

THE BOOK ON POISONS AND VENOMOUS ANIMALS by the Franciscan friar Juan Gil de Zamora (A.D. 1241–1328) (*Liber contra venena et animalia velenosa* in the original Latin title) is a work on medicine written by a Spanish Christian in Castille (Spain) in the 13th Century. It remained unpublished until recently and is still largely unknown among historians of science. The present article aims at illustrating its contents and value, as the *Book on Poisons and Venomous Animals* is among the very rare original scientific works in Latin produced in this period. The main scientific activity of that time consisted, indeed, in translating into Latin the Arabic versions of Galen (A.D. 129–216?) or the works (in Arabic) of such physicians of the Arab-Islamic world as Avicenna (A.D. 980–1037), Rhazes (A.D. 865–925), and Albucasis (A.D. 936–1013). *The Book on Poisons and Venomous Animals* fills in this gap in medical science, which was then understood as a part of natural philosophy.¹

The Author

Juan Gil de Zamora also authored an encyclopedia of natural sciences, the *Natural History (Historia Naturalis)*, which was of particular interest for theologians and preachers because it illustrated the magnificence of the Creation, full of all kinds of marvels. Through this work, Juan Gil de Zamora was included in the great encyclopedic tradition of the Middle Ages, the origin of which can be traced back to another Spanish writer, Isidore of Seville (d. A.D. 636). In the 13th Century, this tradition was flourishing with other scientists such as Alexander Neckham (A.D. 1157–1217), Bartholomeus Anglicus (A.D. 1203–1272), Thomas de Cantimpré (A.D. 1201–1272), and Vincent de Beauvais (A.D. 1190–

1264). All such encyclopedias, which were written in Latin, compiled earlier material which was thus saved from oblivion.

The *Natural History*, on which Juan Gil worked indefatigably, contains a wealth of philosophical data and also data of medical and pharmaceutical nature. A specific entry is devoted to each topic (for example, *absynthion* on absinth, *Artemisia absinthia* L., or *antrace* on anthrax, which is not our anthrax, but a purulent eruption of the skin), and all such entries are organized alphabetically. Unfortunately, only the entries for letter A and the index of letter B are preserved.

Juan Gil's encyclopedia reflects the interest that Franciscan and Dominican friars had for the natural world (*res naturae*), which is further attested by another of his works, the *Book on Animals (De Animalibus)*, as well as *The Book on Poisons and Venomous Animals* under study here, in which the several chapters are organized alphabetically.

A medical doctor and a teacher at the Franciscan convent in Zamora and also a secretary to the Spanish king Alfonso X (A.D. 1221–1284), Juan Gil authored several other works on a great variety of topics, from music to the lives of saints, including rhetoric and history. Through his industry he contributed to the intellectual works of the king, to whom he provided abundant material with which to write the *Cantics (Cantigas)* de Santa Maria².

The *Contra Venena*

The Book on Poisons and Venomous Animals was written between 1289 and 1295, as it is dedicated to Raymond de Geoffrey, who was general minister of the order of St. Francis at that time.³ As a medical work, it is free of beliefs and information on supra-natural powers, as opposed to some entries of the *Natural History*⁴. The author plunges into the language of medicine and tries to present in a systematic way all the data compiled from his sources. Not only does he describe animals and poisonous substances, but also he discusses the classification of poisons, both in general and particular terms.

It might be relevant to note that de Zamora's treatise was written before the similar work, *On Venoms (De Venenis)*, by the famous physician Maimonides (A.D. 1135–1204) had been translated into Latin. It thus could not have followed Maimonides' model, which later became the prototype for any treatment of toxicology. Juan Gil's work also seems to have been either contemporary with, or even earlier than, the treatises on

the same topic by Arnau de Vilanova⁵(A.D. 1238–1311) and Pietro d'Abano⁶(A.D. 1250–1316).

The Book on Poisons and Venomous Animals, which can be defined as a small encyclopedia on the medical treatment of poisoning and envenomation, is currently available through two beautiful manuscripts⁷; one of them is at the Vatican Library (*Biblioteca Apostolica Vaticana*) and the other one at the Bartolomé March Foundation in Majorca. The latter is illustrated with beautiful pictures representing the animals described in the work.

The Preface

The *Preface* presents the author's purpose in writing a book on poisons and venomous animals, which are not only poisonous animals in the usual meaning, but also insignificant animals causing severe inconveniences to man:

Here starts the preface reflection to the book *Against Poisons and Poisonous Animals* and also against other little animals fastidious to our health, little and despicable such as bugs, mosquitoes, grasshoppers, lice, fleas and others similar to these.

The following passage is particularly explicit on the kind of problems the work addresses:

I send you this writing against common poisons and deadly venoms by which emanation or contact many exemplary great men whom the world lost, lost their lives.

The author pursues his reflection on medicine:

The earth is cursed, the generations of men are damned and every creature, as per the words of the Apostle⁸, *cries and suffers with the pains of giving birth*. But the Almighty, to make these miseries and ruin more bearable, created medicine from the earth itself⁹ and the wise man must not reject it.

There is no doubt that these words of the Franciscan friar echo the work by Ibn Juljul (10th cent.), an Andalusí physician who studied with local physicians in contact with the Byzantine monk Nicholas and who tells us about the arrival of a Greek manuscript of Dioscorides' (1st cent. A.D.) work on pharmacology to Al-Andalus in the 10th century. In this excerpt he tells of his vocation for botany:

I had great wishes to know and investigate anxiously the true nature of medicine that is the base of compound medicaments. God with His generosity (...) it is God that created cure and distributed it among the plants that sprout from the earth, He put it in the animals hidden in the depths of the earth. In all of them is the cure, the grace and help of God.¹⁰

Juan Gil approached medicine as a gift from God and a part of the Creation. Such view was not specific to Christian scientists, as Ibn Juljul's passage above makes it clear that medicine was not seen as a merely experimental knowledge.

Christians actively sought the medical works by ancient Greek and Arab scientists and physicians. After the condemnation of the Averroists in 1277 (Averroës, A.D. 1126–1198), however, medicine was approached with great caution. Nevertheless, it was still seen as a discipline that goes beyond mere praxis and searches explanations for such phenomena as generation and death.

Plan Of *The Book On Poisons And Venomous Animals* And Its Internal References

The Book on Poisons and Venomous Animals deals with all animals that are venomous or considered so, big and small, and also includes poisonous substances of mineral and vegetal origin. It consists of 19 treatises presented in alphabetical order (*secundum ordinem alphabeti*) in the original Latin text, in each of which the remedies against the venoms and poisons from plants, minerals and animals are listed.

Preface	
First treatise	On the symptoms of threadworms and earthworms
On black agaric	On the generation of threadworms
On cashew nuts	On the cure of threadworms and earthworms
On general remedy against snakes and aspics	Second treatise
On bees	On the remedy against basilisk
On spiders	On the remedy against grasshoppers
On mercury or quicksilver	Against toads
On threadworms and earth-worms	Third treatise
On the acute illness provoked by threadworms and earthworms	

<Against dogs>
 On the remedy against the barking of dogs
 Against the rabid dog
 Against the bite of non-rabid dog
 Against cantharis
 Against henbane's seed
 Against *castoreum*
 Against the bite of the mice-hunter or cat
 Against *cinomias*, *id est*, dog's fly
 Against centipede
 Against deer's tail
 Against bugs
 Against dog's fly
 Against *cyterum*¹¹
 Against mosquito
 Against coriander
 Against wild cucumber
 Against mosquitoes

Fourth treatise

Against *dypsa*
 Against dragon

Fifth treatise

Against hellebore
 Against caterpillar

Sixth treatise

On ants
 On the remedy against fungi

Seventh treatise

Against weevil

Eighth treatise

Against the bite of rabid men

Ninth treatise

Against henbane

Tenth treatise

On milk
 Against lizard
 On the remedy against lice
 Against leopard
 Against sea hares
 Against slugs
 Against pewter
 Against locusts
 Against earthworms
 Against wolves

Eleventh treatise

On mandragora
 Against mice
 Against shrew
 Against mice-hunting cat
 Against flies
 Against weasel

Twelfth treatise

Against aconite

Thirteenth treatise

Against head lice (ociones)
 Against rosebay
 Against opium

Fourteenth treatise

Against lice
 Against fleas

Fifteenth treatise

Against frog
 Against rat
 Against the thicket frog

Sixteenth treatise

Against salamander
 Against small lizard
 Against leech
 On the election of leeches
 On the preparation of leeches
 On how to place leeches
 On the remedy against leeches
 Against beetles
 Against horseflies

Against scorpion
 Against scorpion's bite
 Remedies for scorpions
 <Against snakes>
 On the nature of snakes
 On the nature of snake poisons and their remedies
 On the virtue of snakes
 Against mosquito (scinifes)
 Against hand lice (sirones)
 Against geckos

Seventeenth treatise

Against horseflies
 <Against moles>
 Against the many types of moles
 On the virtues of moles
 Against the bite of tarantula
 <Against turtles>
 What turtle is and its nature and virtue
 On the many types of turtles
 What moth is, how it forms and its specific remedy
 Against tyro snake
 On the nature and virtue of tyros and remedies against their bite

On snail turtle

Eighteenth treatise

<On venoms>
 On the need to distinguish venoms
 On the nature of venoms and their many types
 How to recognize the signs in venomous substances
 On the cure of venoms taken internally
 On the nature of particular venoms
 On the cure of extrinsic venoms
 On the remedy against wasps
 <Against viper>
 On the nature of viper
 On the virtues of viper
 On the remedies against viper

Nineteenth treatise

On hydra
 Against rabies
Explicit

Each entry on an animal or a poisonous substance is structured according to a pattern that can be summarized as follows:

1. Etymology, as per Isidore;
2. Morphology, according to different authors;
3. General and specific remedies, from several different sources.

Some entries like the one on earthworms or leeches are long, while others, like the one devoted to cats, have only a couple of lines.

The author marks very clearly the relations between the different treatises by means of internal references with formulas like the following:

on this topic, see below
 on this topic, see the treatise
 on these, mention has been made or will be made, individual and especially, in the right place, according to their alphabetical order

The Sources Of The Treatise

The sources consulted by de Zamora are numerous. The authors and works that he mentions include

- Alclides (uncertain chronology, author of a *Book on poisons* [*Liber de uenenis*]),
- Alexander (of Tralles? 6th cent. A.D., author of a *Medical Art* [*De arte medica*]),
- Algazel (A.D. 1058–1111),
- Apuleius (not the Latin author [b. ca. A.D. 125], but a Pseudo-Apuleius, 4th cent. A.D.),
- Aristotle (384–322 B.C.),
- an author known only as *Auctor*,
- Avicenna (A.D. 980–1037 author of the famous *Canon of Medicine* [*Liber Canonis*]),
- Belbetus (uncertain chronology, author of a *Book on Senses* [*Liber de sensibus*]),
- Boetius (A.D. 480–525),
- Constantine the African (A.D. 1020–1087?),
- the pharmacologist Dioscorides (1st cent. A.D.),
- the mathematician Diophantus (d. A.D. 298),
- Esculap (uncertain chronology, author of the *Book of Escolapius On the Secrets of Members* [*Liber Escolapii occultis membrorum*]),
- the great physician synthesizer of all ancient medical knowledge Galen (A.D. 129–216?),
- Gilbert (of Anglia A.D. 1180–1250 author of a *Compendium of Medicine* [*Compendium Medicinae*]),
- the Arab physician known in the West as Haly (Aly ibn al-`Abbâs, author of *Royal Book*, that is, the *magisterial book* [*Kitâb al malikî*], A.D. 930–994 [?]),
- Isidore (d. A.D. 636),
- Iorach (author of a *Book on Animals* [*Liber de Animalibus*], 1st cent. B.C.),
- Isaac (A.D. c.853–955),
- Nigidius (98–45 B.C.),
- the Latin agronomist Palladius (4th cent. A.D.),

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- the so-called *Physiologus* (2nd cent. B.C.[?])
 - Pythagoras, supposedly the Greek mathematician (6th-5th cent. B.C.), in fact, a pseudo of uncertain chronology, author of *Book of Romans* (*Liber romanorum*),
 - the ancient naturalist Pliny (A.D. 23/24–79),
 - Rāzī (A.D. 865–925),
 - Ruphus (of Ephesus? 1st cent. A.D.),
 - Solinus (mid-3rd cent. A.D.),
 - the Alexandrian philosopher and physician Stephanus (6th cent. A.D.), and
 - Ypocas (Hippocrates 460–between 375 and 351 B.C).

This list is suggestive of Juan Gil's compilation method, even though it does not include such contemporary authors as the encyclopedists Bartholomeus Anglicus, Thomas de Cantimpré, and Vincent de Beauvais, although they were Juan Gil's most important sources. A close scrutiny of both works reveals that among them, he used mostly the *Speculum Quadruplex* by Vincent de Beauvais. Between them, there are indeed not only similarities, but even absolute identity in most treatises. However, the plan of de Zamora's work and the changes he introduced in the material reproduced from Vincent de Beauvais come from the *Canon* of Avicenna, especially Books IV and II. Avicenna's influence is particularly clear in the composition of the treatise on the classification of poisons (*On Poisons, De uenenis*) and the treatise on threadworms and earthworms.

The Value Of *The Book on Poisons and Venomous Animals*

The Book on Poisons and Venomous Animals is interesting for many reasons, the most significant of which might be the conjunction of philosophy and medicine. Both disciplines are understood as forming an indissoluble entity as the author makes clear in the *Preface*. Also, Juan Gil de Zamora introduces a series of new elements such as generation, and he exposes theories that were not necessarily orthodox in his time and that caused serious problems to such renowned and authoritative physicians as Arnaldo of Villanova (A.D. 1238–1311) or Pietro d'Abano (A.D. 1250–1316).

Of great interest is also the combination of the Latino-Christian scientific tradition represented by Isidore and his sources, for example Pliny (A.D. 23/24-79), on the one hand, and, on the other, the new

medicine resulting from the translation into Latin of Arabic medical works, mainly the version of Galen's works, and Avicenna.

The treatise on the classification of poisons has another interesting aspect: it proposes a classification that became canonical. Furthermore, it analyzes the several toxic substances according to a fixed scheme, which is the following:

- differentiation of poisons;
- the nature and type of poisons;
- how to recognise the signs of poisonous substances;
- the cure of external poisons;
- the remedy to internally taken poisons.

Though original, such classification undoubtedly reminds one of Avicenna, who made a similar classification in the Fen 6 of the IV book of *Canon*:

We are going to write a brief treatise on poisons and poisonous animals in general. First of all we will show and order the general differentiation of the poisons. Secondly we will mention the general signs and which ones are deadly. Thirdly, the general cure of the ingested poisons and what care must be taken against them. Fourth, the general differentiation of each one of the poisons. After that the differentiation of the poisons that affect from the outside and their general cure. On other singular aspects, it has already been said or will be said according to alphabetical order.

The poisons and their treatment (particularly the theriac, which was a panacea made of many ingredients, among which was the flesh of vipers) are the main two themes of any treatise on poisons and venoms. This is how Isidore defines a poison¹²:

It is called poison because its venom advances once it has reached the veins, carried by the body's stream, and searched the soul. Hence the poison cannot do harm if it does not touch man's blood.

As for theriac, Isidore¹³ defines it as follows:

The theriac is the antidote of snakes with which the poison is expelled, because a venom (that is, the venom supposedly contained in viper's flesh) dissolves with venom.

Juan Gil often mentions the term "theriac" to define a remedy of universal application and extremely efficacious against any poisoning. He mentions several types of theriac, using their traditional names: the *diaterason* (made of four main ingredients), the *opronia* (*apronia* in Pliny), and the *mitridatica* (supposedly dating back to Mithridates, the

king of the region of Pontos, on the Black Sea [king 120–63 B.C.]). In the *Natural History*, de Zamora mentions also a *theriac of peasants*, made of garlic. At one point, he treats as synonyms the two terms *theriac* and *bezoar*, the latter being frequently used in the *Book on Poisons (De uenenis)* by Pietro d'Abano, without doubt under the influence of Avicenna, while the bezoard is a mineral substance normally found in the digestive system of a certain number of the cetaceous order.

A final point of interest is that Juan Gil de Zamora discusses the origin of the theriac, although his was a medical work using proper medical terminology and methods of exposition of data. Before him, Thomas de Cantimpré had already told a story on the origin of theriac. He mentioned the snake Tyro, a deadly species from whose flesh is extracted the wondrous antidote called *Theriaka*, *Tyriaca* or *Triaca*. According to his explanation, at the moment when Christ died on the Cross, a Tyro coiled on the Cross and was granted the gift of curing all evils with its flesh. No doubt such a story is of medieval origin, as sin was identified as a poison and Christ's redemption as theriac¹⁴ to any sin. In this vision, Christ became both a healer and a universal medicine. Significantly, after he reported this story, Juan de Zamora returned to the tone of a medical work and gave the instructions on how to manufacture an excellent theriac:

The flesh of the tyros, according to Haly, has to be taken in praiseworthy places and with a spring climate. If four fingers are cut from the side of the head and the tail, they dry all the excrescences of the ingested poisons, cleanses the members, dissolve them and expel them from the body through sweat. They are also good for the thick humours that provoke leper, morfea and elephantiasis, and also cure bites and lethal potions. *Physiologus* says on the topic: tyro's poison, because of its speed, expands easily to the ends, that is to say, to the head and the tail. That's why cutting four fingers from the head and the tail, considering its length, that part in the middle is extracted with care and boiled until the bones can be separated. Once cleaned, cut it and make small pieces.

The inclusion of the origin of the theriac clearly results from the encyclopedic nature of the work, and the story is perfectly integrated in the *Book on Poisons and Venomous Animals* thanks to the final consideration, of a strict medical nature.

By all these aspects, the *Book on Poisons and Venomous Animals* illustrates well the association of science, culture, and tradition in the Middle Ages, and reveals aspects not necessarily witnessed by any other explicit source.

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- ¹ *Visualizing Medieval And Natural History. 1200-1550*. J.A. GIVENS, K.M. REEDS, & A. TOUWAIDE (eds.), 2006
- ² C. FERRERO HERNÁNDEZ, “La obra latina de Juan Gil de Zamora y su relación con la literatura contemporánea peninsular”. *Actas Del IV Congreso Internacional De Latin Medieval Hispánico*. Lisboa, 2006. pp. 471- 480.
- ³ A. PELZER, “Un traducteur inconnu: Pierre Gallego, franciscain et premier évêque de Carthagène”, *Miscellanea F. Ehrle*, Roma, 1924, 407-456. p. 408, n. 1, provides a valuable information on the date of the work, obtained after correcting Stornajolo, *Cod Urb. Lat.*, (p. 310), in the reading of the dedication: *Le copiste a certainement écrit: R., et non pas: B. (...) Il s’agit donc du général Raymond Geoffroy, ce qui place la composition de l’écrit entre les années 1289 et 1295*.
- ⁴ J. MARTÍNEZ GÁZQUEZ, “La moralización de las piedras preciosas en la *Historia Naturalis* de Juan Gil de Zamora” *Faventia* 20/2, 1998, pp. 177-186; y “La moralización de los animales en Juan Gil de Zamora” *Micrologus* VIII, I, *Il Mondo animale*, Firenze, 2000, pp. 237-259.
- ⁵ Besides the treatise *De uenenis (On venoms)* (which might be a re-elaboration, *vid.* J.A. Paniagua, “El maestro Arnau de Vilanova médico”, *Cuadernos Valencianos de Historia de la Medicina y de la Ciencia* VIII, A, 1969, and also M. R McVaugh, “Introducción”, *Arnau de Villanova Opera Medica Omnia*, III. Edit. M.R. McVaugh. Barcelona, 1985, p. 66) Arnau de Vilanova is also credited with *The Art of Identifying Venoms (De arte cognoscendi uenena)* and a *Book of Anditotes (Antidotarium)*, thought to be authentic (J.A. Paniagua, “Maître Arnau de Vilanova, paradigme de la Médecine Universitaire Médiévale”, *Colloque International d’histoire de la Médecine Médiévale*, t. I, 1985, pp. 64-73), and also a *Letter on the Dose of Theriacal Medicines (Epistola de dosi tyriacalium medicinarum)* (*vid.* *Arnau de Vilanova Opera Medica Omnia*, III. Edit. M.R. McVaugh. Barcelona 1985).
- ⁶ The treatises *On venoms (De uenenis)* by Pietro d’Abano is dated on the basis of the dedication to Pope Boniface VIII, (1294-1303) although Pietro mentions in the work a translation that he himself had made of Avenzoar; this is why the dedication was interpreted as referring to Pope John XXII; however, the quotation seems to have been inserted in the 15th Century (see L. Thorndike, *History of Magic and Experimental Science*, II. New York and London, 1923, p. 937). The comparison between the work of the friar from Zamora with the works of these two prestigious doctors has to be made because of the similarity between both works in the general study of venoms, and also because of the different focus: while the work of the *zamorense* is organized “according to the order of the alphabet”, Arnau’s and Pietro d’Abano’s are more methodologically organized for the venomous substances. For P. d’Abano we have used a microfilm edition copy of P. Aponensis, *De Venenis*, Marpurgi, 1537.
- ⁷ Biblioteca Apostólica Vaticana, 1404 *Urb. Lat.*, ff. 1r-99r, s. XIV (Roma).
Biblioteca de la Fundación Bartolomé March, MF 139, ff. 1r-109r, s. XV (Majorca).
- ⁸ Paul, *Ep. ad Romanos*, 8, 22-3
- ⁹ *Historia Naturalis* 1602 *De animalium debita ordinacione ad multiplicem hominis utilitatem eciam medicinalem, nonus tractatus*
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- ¹⁰ Juan Vernet, “Los médicos andaluces en el libro de las generaciones de médicos de Ibn Yulyul” *Estudios sobre la ciencia medieval*. Bellaterra, 1997, pp. 445-462.
- ¹¹ Not included in his index under C, but he devoted a treatise to it.
- ¹² *Etymologiarum siue originum libri XX*, lib. XII, iv, 41. See A. TOUWAIDE, “De la matière à la nature: les transformations d’un concept pathologique de l’Antiquité aux débuts du Moyen-Âge: *venenum* chez Isidore de Séville *Etym.* XII, 4”. *Nommer la maladie: Recherches sur le lexique gréco-latin de la pathologie*. A. DEBRU et G. SABBAAH (ed.). Saint-Etienne, 1998, pp. 143-155.
- ¹³ J. MARTÍNEZ GÁZQUEZ, “Isidoro y la medicina en los enciclopedistas hispanos: D. Gundisalvo y Juan Gil de Zamora”, *Isidorus Medicus, Isidoro y los textos de medicina*. La Coruña, 2005.
- ¹⁴ C. FERRERO, “El veneno y la triaca. De Juan Gil de Zamora a Calderón de la Barca”, *Actas del III Congreso Hispánico de Latín Medieval*. León, 2002. pp. 307- 322.