

Poisons and the Prince: Toxicology and Statecraft at the Medici Grand Ducal Court

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7.1 POISONS IN 16TH-CENTURY SOCIETY

During the centuries that the Medici family reigned over Florence and then Tuscany (1531–1743), poison was a major preoccupation of Europe's ruling elite. Letters sent to Grand Duke Cosimo I de' Medici (1518–74) (Fig. 7.1) speak continually of poisoning as an assassination method. Citing symptoms such as red rashes, bleeding from all the orifices of the head, vomiting of food and blood, blackened skin, and extreme postmortem edema, Cosimo's correspondence implicates poison in the deaths of Charles IX of France, Cardinal Charles de Lorraine, Countess Bianca Ragnoni Guidi, and Cardinal Ippolito de' Medici; it blames poison for the illnesses of Queen Mary of Scotland, Cardinal Charles Borromeo, and the monks in a monastery in Sansepolcro; and it warns of the plots to poison Queen Elizabeth I, King James I, Prince Andrea Doria, Marchioness Pentelisea Dal Monte Santa Maria, King Philip II of Spain, and his consort Elisabeth de Valois. Pope Paul III and Henry II of France were said to be attempting to poison Ferrante Gonzaga, who in turn was conspiring with Cosimo to taint the wine flask of their common enemy, Piero Strozzi. Cosimo himself was the target of poison plots: In 1556, a letter alerted him to the danger of poison-laden hand towels, and 3 years later another letter warned him that a trusted woman was trying to render his food and drink deadly.

Contributing to the frequency of poisonings were the many means of carrying them out. In Renaissance Tuscany these included venoms from snakes, scorpions, toads, and fish; phytotoxins from hemlock, black henbane, oleander, aconite, poppy, nox vomica, black nightshade, and white hellebore; and mineral and alchemical poisons such as arsenic, gypsum, and the mercury salt called *solimato*. In addition,



Figure 7.1 Lodovico Cardì (*Il Cigoli*). Portrait of Grand Duke Cosimo de' Medici. 1602–03. Oil on canvas, 395 × 215 cm. Palazzo Medici-Riccardi Prefettura, Florence, Italy. Photo by Kaho Mitsuki, Image in the Public Domain (PD-1996).

poisonings could occur in the absence of a human agent, whether through the bite of a rabid dog or a breath of pestilential air. Poisonous air, moreover, was a danger not only in times of plague, but also anytime that a rotten smell could be detected since, according to Renaissance medical theory, the unpleasant odors released by decaying, corrupt matter were themselves agents of morbid putrefaction. During Cosimo's reign, Tuscany experienced several public health crises due to poisonous air. In one case, putrid smells issuing from Pistoia's Hospital of the Ceppo ([Fig. 7.2](#)) began sickening the nuns in the monastery next to it; in another case, Cosimo's dredging of the harbor at Livorno in 1546 released a terrible stench that local authorities blamed for the port



Figure 7.2 Hospital of the Ceppo (Ospedale del Ceppo). Pistoia, Italy. Photo by Jollyroger, licensed through Creative Commons CC-BY-SA-3.0.

city's subsequent surge in death rates and decline in birth rates; and, in a parallel situation, when Cosimo attempted to reclaim the swamplands known as the Padule di Fucecchio by planting an orchard, the local peasants protested that his fruit trees were rotting and exuding pestilential fumes that in turn were the cause of a genocidal die-off in the surrounding villages.

As plentiful as the poisons were the individuals who trafficked in them. Physicians and apothecaries used them frequently, and were expected to take precautions such as storing potential poisons in locked containers, and adjusting dosages according to the patient's physical condition, such as with the sleeping drug made from nightshade whose recipe warns that "this medicine is very dangerous, and should only be used on those in very robust health" (Ms, Marc. It. III.10). Another category of learned professionals with expertise in poisons, particularly phytotoxins, were the herbalists whom the grand dukes employed at their two botanical gardens and at their university in Pisa. Renowned for having such knowledge was the duke of Alba's herbalist. He specialized in making poisons for hunting large game, four powder kegs of which were sent as a gift to Cosimo's son, Francesco de' Medici (1541–87). Like hunting, warfare also entailed the use of toxins. Soldiers coated their knives and the shot of their arquebuses (an early style of long gun) with poison in order to compound the lethality of their weapons, and it was a common military strategy to poison the wells in enemy territory. Suppliers to a wide

cross-section of society were the shadowy people whose knowledge of toxicology was more casually acquired. Examples are the woman known as Girolama Venefica and the sorcerer named Apollonio, societal outliers who ran a grave risk of being scapegoated whenever murder by poison was committed in their vicinity.

Even the ordinary subjects of the Medici grand duchy were equipped to concoct poisons. Artisans and artists worked on a regularly basis with toxins such as the poison sumac used to make wood varnish, the mercury used to refine gold, and the cinnabar, lead, and minium (a form of lead tetroxide) used in painting. Monastics often cultivated dangerous plants in their cloister gardens and, still etched in communal memory, was the occasion when the nuns of Santa Petronilla in Perugia had poisoned Pope Benedict XI in 1304 by means of laced figs (Ms, BNCF, Magl. XXV, 18). Even children knew about poisons, as demonstrated by the case of a girl in Sienna who, fearing that she would be forced into a nunnery, fed her family a salad sprinkled with deadly mercury salts and quicksilver that her mother had obtained from a milliner for cosmetic purposes and which she had kept in a lockbox.

7.2 KNOWLEDGE OF POISONS AT THE MEDICI COURT

Several generations of the Medici family possessed an empirical knowledge of poisons. In the 15th century, these included banking tycoon and alchemical tinkerer, Cosimo “Pater Patriae” de’ Medici (1389–1464) and Grand Duke Cosimo de’ Medici’s paternal grandmother Caterina Sforza (1463–1509), whose prodigious collection of alchemical, medical, veterinary, and magical recipes was handed down through the family. Although Grand Duke Cosimo de’ Medici sent a letter in 1548 in which he foreswore any desire to abet a scheme to poison someone (“things that horrify us”) and protested that he had no relevant recipes, an internal court memo written immediately afterwards proves that the duke’s letter was deliberately composed to deflect suspicion in case of interception. Cosimo was not, in fact, above suspicion: In 1566, malicious gossip accused him of poisoning his chamberlain, Sforza Almeni.

In truth, Cosimo not only knew of the poison-brewing sorcerer named Apollonio, but he also kept a poison recipe among his important confidential documents. Furthermore, he owned several books and manuscripts in which poisons were discussed, including Dioscorides’

Materia Medica, Pliny's *De Natura Rerum*, various Galenic writings, a well-annotated copy of Pietro Andrea Mattioli's *Discorsi*, a Latin manuscript roughly based on Pietro d'Abano's *Liber de Venenis*, and a vulgate abridgement of Abano's treatise entitled "Trata de li veneni." Recipes for poisonous compositions also crop up in the grand duke's alchemical treatises and recipe collections, such as the formula for a "perfect temper for armor" that warns the alchemist to "watch out not to cut yourself (while handling the temper) in any way, because it will be incurable as this is extremely poisonous" (Ms, BNCF, Stroz. XIX, 94). In the margin next to this formula, Cosimo wrote "veleno" ("poison"), indicating perhaps what he considered to be a more useful application of the temper recipe.

Cosimo's children pursued their father's interest in poisons. The elder son, Francesco, noted above for having received hunting poison as a gift, was so well versed in toxicology that when one of his courtiers, Count Clemente Pietra, was murdered in 1574, Francesco deduced that the knife which had wounded him must have been coated with a Spanish poison. Francesco was also the dedicatee of [Bacci's \(1573\)](#) treatise on the unicorn horn as an antidote (a subsequent edition was dedicated to Francesco's second wife). Acceding to the throne after Francesco's untimely death—one which has always been overshadowed by suspicions of poisoning—Cosimo's younger son Ferdinando (1549–1609) gave patronage to a physician with unsurpassed toxicological expertise: Girolamo Mercuriale, the author of the 1584 *De venenis, et morbis venenosis tractatus locupletissimi* ([Mercuriale, 1584](#)). Ferdinando's personal and pragmatic toxicological knowledge is revealed in a letter he sent, along with some poison, to an agent in 1590. Ferdinando's letter explains how to slip the poison into the enemy's wine flask, and touts the composition as being odorless, tasteless, and sufficiently potent to kill with just one tainted glass of wine. Francesco's orphaned son, Don Antonio de' Medici (1576–1621), dedicated himself to alchemy and his recipes included a formula for "the herb for the cross-bow," made from the root of white hellebore (Ms, BNCF, Naz. II.I.345).

7.3 MEDICI ANTIDOTES

The fear of poisons sometimes induced paranoia and ferocious intolerance among the ruling elite. Thus, it was not an isolated case when the Italian military commander Alfonso d'Avalos d'Aquino, Marquis of



Figure 7.3 Benvenuto Cellini, Cellini Salt Cellar (also known as the Saliera). 1543. Partially enameled gold. Kunsthistorisches Museum, Vienna, Austria. Photo by Vassil, licensed through Creative Commons CC0-1.0.

Pescara, had a servant drawn and quartered in 1546 merely for being in possession of a poison. The Medici, however, made recourse to laws rather than violence in order to combat poisoning. Notably, Duke Alessandro de' Medici issued a decree in 1531 prohibiting Florentine apothecaries from supplying anyone, regardless of rank or station, with arsenic, *solimato*, realgar, or any other poison, and mandating that poisons be kept locked away. The future Medici grand dukes extended Alessandro's laws throughout all of Tuscany, where fines or jail—not death—remained the punishment for unlawful possession of poison (Ms, BNCF, Targioni Tozzetti 189, cod. 5).

Besides legislating controlled substances, the Medici also put a phalanx of safeguards into place around their banquet tables. They chose their kitchen staff carefully, employing a *scalco* and a *bottigliere* to ensure the safety of the food and wine. Out of scruple, the grand duchesses maintained their own kitchen staff, recruiting from their homelands to foster these servants' loyalty. As an additional precaution, some of the vessels on the dinner table served for the detection and neutralization of toxins. Open-air salt cellars with shiny silver and gold surfaces, such as the magnificent *Cellini Salt Cellar* (Fig. 7.3) created by Florentine goldsmith Benvenuto Cellini in 1543, were just such mechanisms. Their utility is explained in the treatise *De venenis* by physician

Antonio Guainerio, who asserted that air “sweats” in the presence of a poison, especially in the vicinity of salt, pointing out that a shiny metallic surface allows one to see this sweat; moreover, according to Guainerio, the salt itself counters the effects of poison (Thorndike, 1934).

Another line of defense was provided by the opulent goblets from which the Medici drank, since many of these were wrought from alexipharmic stones. A prime example is the kylix (a wide and shallow cup with horizontal handles) given by Catherine de’ Medici to her granddaughter Christine de Lorraine, who then brought the cup to the Medici court as part of her wedding trousseau (Magnificenza alla corte dei Medici, 1997). It was made of the green chalcedony called plasma, which loses its luster upon contact with a poison according to Mercati’s (1576) treatise, *Istruzione sopra i veleni*. The cup that Cosimo I de’ Medici received from Mughal Emperor Humayun at the hands of a Marrano jewel merchant named Alvaro Mendes was made of rhinoceros horn, a material regarded as powerful antidote when even a tiny amount of its filings were taken with wine (Bacci, 1573; Mercati, 1576). Since the true animal origins of purported rhinoceros and unicorn horns were difficult to assess, distinguished provenances were once the best argument for these objects’ authenticity and efficacy. Thus, in 1546, Cosimo de’ Medici decided to purchase a unicorn horn when he learned that it had been previously owned by two of his ancestors, Pope Clement VII de’ Medici and Cardinal Ippolito de’ Medici.

Aside from such rarities, the majority of the Medici’s precious alexipharmic vessels were made either from agate—a cure for scorpion and viper venom, according to Bacci’s (1587) treatise, *Le XII pietre pretiose*—or from lapis lazuli. Notably, the latter was not utilized for vessels at the Medici court until the late 16th century. The reason for the Medici’s diffidence may have been lingering associations of lapis lazuli with poison. Although Galen had endorsed this stone, Avicenna and Averroes had denigrated it as a corrosive poison (Mattioli, 1548, “Della Pietra Cerulea”). Similarly, the two above-mentioned treatises derived from Pietro d’Abano’s writings had designated lapis lazuli in its untreated form as a toxicant that injured the stomach and caused symptoms of acute melancholy. The subsequent reintegration of lapis lazuli among *materia medica* was probably instigated by Mattioli’s argument in his 1548 *Discorsi* that Arabic physicians had been confused about the stone’s identity. Sanctioned by Mattioli, treated lapis lazuli was included in Florence’s official pharmacopeia of 1560 (Ricettario, 1560).

Of all the Medici dynasty's measures against poisoning, the most consequential was their production of the antidote known as "Olio contro a veleni del Granduca." Both a prophylactic and a cure, its distinguishing ingredient was a laboriously prepared oil made from scorpion venom (although its opium content was not to be discounted). Grand Duke Cosimo I was hailed as its inventor. However, its formula resembles earlier antidotes, including one attributed to Mesue, one from Mattioli's *Discorsi*, and one named "Oleum Clementis" after Pope Clement VII de' Medici, who had distributed it during the plague of 1527 (Faloppio, 1606; see also Perifano, 1997).

Grand Duke Cosimo I never sold his antidote; rather, whenever allies and friends needed it, Cosimo sent the drug by courier, packaged in glass vials that were tucked into the compartments of customized wooden cases. Soon it was requested by nobles throughout Europe, including the duke of Bivona, the duke of Montmorency, the duchess of Alba, and the count of Frankenburg, who thanked the grand duke with gifts of rare stones. It did not hurt the drug's reputation that Mercati, in his 1576 *Lesson on Poisons*, classified the "oil made by the Grand Duke of Tuscany" as an antidote that "resolves or evaporates the poison." By the late 16th century, Medici ambassadors stocked it at their outposts as a ready diplomatic gift for foreign rulers beset by plague, incurable fevers, poison, and, on occasion, any life-threatening condition for which no cure was known. Though the Medici grand duchy was a mere satellite state in the grand scheme of European politics, the priceless drug gave them an unexpected advantage in an age when it was a truism that "remedies against poisons should always be kept on hand by great princes" (Mercati, 1576).

7.4 TESTING POISONS

With such a valuable diplomatic tool in their hands, the Medici grand dukes were understandably concerned about its efficacy. As already noted, they packaged the scorpion-oil antidote carefully, both to resist breakage and to prevent degradation of the drug due to interaction with its container or temperature changes. Sometimes, the Medici grand dukes warned recipients that the oil was no longer fresh (being prepared only once a year in accord with the annual "maturation" of scorpion venom around August, when the dog star Sirius reappears in the night sky). Though there is no firm proof, it is possible that the

Medici tested the Olio del Granduca to ascertain its medicinal value. The testing of antidotes was not unprecedented in Renaissance Italy. Fallopio asserted that his teacher, Antonio Musa Brasavola, had tested the Oleum Clementis on a condemned criminal at the duke of Ferrara's command, and Andrea Bacci recounted how Cardinal Cristoforo Madruzzo had verified a unicorn horn's efficacy by administering some filings to one of two doves that had been fed arsenic (Fallopio, 1606; Bacci, 1573). Indeed, the idea of testing may have occurred to Cosimo in 1546 when a Tuscan peasant claimed to have found a unicorn horn growing inside a tree, and proved its authenticity by testing its antidotal powers on a dog that had been fed a poison. Two years later, in 1548, Cosimo sent his poison antidote to Duke Ferrante I Gonzaga and recommended that it be tried first with a prisoner awaiting capital punishment; aware that different batches might behave differently, he sent both old and new preparations of the oil as well as dosing instructions. The Medici grand duke himself called for such an experiment in 1566 in order to test a different antidote, Mattioli's "powder against all poisons" (based on the recipe in his *Discorsi*, bk. 6), a batch of which had been prepared a month in advance by the court apothecary, Geremia Foresti. After a convict on death-row agreed to take a mortal dose of arsenic followed by the experimental powder, the subject endured several days of excruciating intestinal agony while a panel of six physicians working in continual shifts carefully recorded his vital signs and prepared a medical report (Ms, ASF, Carte Strozzi, I, 97; see also [Marinozzi et al., 2015](#)). By 1576 the Olio del Granduca itself was being tested at the Medici court. According to a Venetian ambassador's report from that year, Grand Duke Francesco de' Medici ordered prisoners awaiting their death sentences to drink poison, "and then using this oil he cured them" ([Relazioni degli Ambasciatori veneti al Senato, 1916](#)).

By the 17th century, the testing of potential new antidotes as well as the poisons themselves had captured the fascination of the Medici court. Girolamo Mercuriale recounted such an experiment performed under Grand Duke Ferdinando I on a man condemned to the gallows in Pisa, as a means of determining the efficacy of unicorn horn that someone wished to sell him; the poison, crystalline arsenic, was apparently effective, but the antidote failed ([Mercuriale, 1589](#)). In 1637, an elaborate poison experiment was carried out in Florence as "a noble and virtuous entertainment" to cheer the convalescent grand duke,



Figure 7.4 Frontispiece: Francesco Redi, *Osservazioni intorno alle vipere*. Florence: *All'Insegna della Stella*, 1664. Image in the Public Domain (PD-1923).

Ferdinand II. Turtles, geese, peacocks, goats and foxes were all bitten by the same viper, and after all the animals died as a result, the autopsies revealed blood clots in the heart and the veins. Following an impromptu debate over whether the clotting was the cause of death or merely a corollary symptom, several tests were done with vipers to determine where the venomous organ was located. During the course of these tests, the viper handler voluntarily drank all the venom that could be milked from the snake, he consumed its pulverized fangs, and he ate its liver as well, to show that these did not cause harm; but then he put a single drop of the same venom on a small cut made on a chicken, and the bird died after three hours, revealing that the venom's action was on the blood (Targioni Tozzetti, 1780). Some of these same experiments were repeated in Florence two decades later by Medici court physician Francesco Redi, only now under the rigorous testing

methodology promoted by the Medici's Accademia del Cimento, of which Redi was a founding member. Redi's descriptions of these experiments, considered a milestone in experimental toxinology, were published first in 1664 and again in 1687 as *Osservazioni intorno alle vipere* (Redi, 1664) (Fig. 7.4). By this time, toxicology had become an openly discussed science and a point of pride for the Medici grand dukes. At the same time, poison itself managed to acquire an occasional benevolent face, providing aid in certain dire situations. For example, at the Medici grand dukes' hospital of Santa Maria Nuova, euthanasia by poison was carried out in 1654 and again in 1659 in cases of rabies, which was then incurable as well as agonizing for the patient and his or her caretakers. Thoroughly domesticated and exploited to every possible advantage, poisons had at last acquired a degree of scientific cachet under Medici tutelage.

7.5 RESOURCES

7.5.1 Manuscripts

Archivio di Stato di Firenze (ASF):

Santa Maria Nuova 149
Carte Stroziane, ser. I, filza 97

Biblioteca Nazionale Centrale di Firenze (BNCF):

Magliabechiana XXV, cod. 458
Nazionale II.III.299
Palatina 548 "Trata de li veneni"
Stroziani XIX, cod. 94
Targioni Tozzetti 189, "Selva di Giovanni Targioni Tozzetti," cod. 5

Biblioteca Nazionale Marciana (Marc.): It.III.10

7.5.2 Databases

"BIA" published by the Medici Archive Project: www.bia.medici.org

REFERENCES

Bacci A: *L'alicorno*, Florence, 1573, Giorgio Marescotti.

Bacci A: *De venenis et antidotis prolegomena seu communia praecepta ad humanam vitam tuendam saluberrima in quibus diffinitiva methodus venearum proponitur per genera, ac differentias suas partes, & passiones, praeservandi modum, & communia ad eorum Curationem Antidota complectens. De canis rabiosi morsu, et eius curatione*, Rome, 1586, Vincenzo Accolti.

Bacci A: *Le XII pietre pretiose, le quali per ordine di Dio nella Santa Legge, adornano I vestimenti del sommo Sacerdote. Aggiuntevi il diamante, le margarite, e l'oro poste da S. Giovanni nell'Apocalisse in figura della celeste Gierusalemme: con un sommario dell'altre pietre pretiose*, Rome, 1587, Bartolomeo Grassi.

Fallopio G: *Opera Genuina omnia, tam practica, quam theorica*, Venice, 1606, De Franciscis.

Magnificenza alla Corte dei Medici, 1997, Electa; Milan.

Marinozzi S, Giuffra V, Kieffer F: Baccio Baldini (1517–1589), protomedico alla corte medicea tra umanesimo e sperimentalismo, *Acta Med Hist Adriat* 13:345–364, 2015.

Mattioli PA: *Discorsi [= Di Pedacio Dioscoride Anazarbeo Libri cinque Della historia, et materia medicinale tradotti in lingua volgare italiana da M. Pietro Andrea Matthiolo Sanese Medico, con amplissimi discorsi, et comentì, et dottissime annotationi, et censure del medesimo interprete]*, 2nd ed., Venice, 1548, Vincenzo Valgrisi, Books 5 & 6.

Mercati M: *Istruttione sopra i veleni [= Istruttione sopra la peste di Michele Mercati. . .aggiuntevi tre altre instruttioni: Sopra i veleni occultamente ministrati, Podagra & Paralisi]*, Rome, 1576, Vincentio Accolto.

Mercuriale G: *De venenis, et morbis venenosis tractatus locupletissimi*, Venice, 1584, Paolo Meieto.

Mercuriale G: *Consultationes [= Reponsorum et consultationum medicinalium in duo volumina digesta]*, Vol. II, Venice, 1589, Iolitos.

Perifano A: *L'Alchimie à la cour de Côme 1^{er} de Medicis: savoirs, culture et politique*, Paris, 1997, Honoré Champion.

Redi F: *Osservazioni intorno alle vipere*, Florence, 1664, All'Insegna della Stella.

Relazioni degli ambasciatori veneti al Senato, Vol. IV, Bari, 1916, Laterza.

Ricettario utilissimo et molto necessario a tutti gli spetiali, che vogliono preparar le medicine regolatamente, da diversi et eccellenti medici riveduto & approvato, 1560, Vincenzo Valgrisi; Venice.

Targioni Tozzetti G: *Notizie degli aggrandimenti delle scienze fisiche accaduti in Toscana nel corso di anni LX. del secolo XVII*, Florence, 1780, Giuseppe Bouchard.

Thorndike Lynn: *A history of magic and experimental sciences*, Vol. IV, New York, 1934, Columbia University Press.