Thanks to the grasspea: a representation of lathyrism in Madrid by painter Francisco de Goya

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ABSTRACT

Of Francisco de Goya's series of 82 engravings entitled *The Disasters of War*, 16 are dedicated to the extreme famine suffered by the population of Madrid in 1811-1812. In *Thanks to the grasspea* (engraving 51), a group of ragged and impoverished individuals is shown around a large pot in the middle of the street. The painter highlighted in the foreground the figure of a woman who crawls on the ground to reach what appears to be a communal meal. She could represent a victim of lathyrism in the most severe stage (crawling). On 2 July 1812, the *Diario de Madrid* newspaper issued a proclamation from the mayor of the town warning of the "malignancy" of certain ingredients that adulterated bread, such as grasspea (*Lathyrus sativus*), considered a serious risk to public health. Goya probably reproduced -- (for the first time in history) a victim of lathyrism. Future research may show whether the disease reached an epidemic status in the city of Madrid.

KEYWORDS

Grasspea, Francisco de Goya, Peninsular War, famine, lathyrism, *The disasters of war*, Madrid

Introduction

Lathyrism is a self-limiting neurodegenerative disease of the upper motor neuron that causes spastic paraparesis of acute or gradual onset. It is caused by excessive and prolonged intake of food derived from the grasspea seed (*Lathyrus sativus*), a legume with a high protein content, easy cultivation, and environmental resistance. Lathyrism usually occurs during famines due to either armed conflicts or environmental catastrophes with prolonged droughts and poor harvests, when it is necessary to resort to the heavy consumption of this legume. Grasspea seed contains the non-protein excitotoxic amino acid β-N-oxalyl-α,β-diaminopropionic (L-β-ODAP), a potent agonist of the α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) glutamate receptor.[1,2] A food with a future in a globally warming world, the challenge has been to develop seed varieties with a low β-ODAP content. In India, where lathyrism has been endemic in states such as Uttar Pradesh, the cultivation of khesari dal (its popular name) was prohibited in 1961, but the ruling was annulled in 2015 in view of the proposed safety of new varieties (K. Srivastava, Mongoway, May 31, 2019. india.mongobay.com). In certain parts of Spain, where an epidemic of lathyrism occurred following the 1936-1939 Civil War, small amounts of grasspea continue to be consumed

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Figure 1. *Thanks to the grasspea*. Etching and burnished aquatint, ca. 1812-1815.

(Giménez-Roldán, Palmer, and Spencer. Lathyrism in Spain: lessons from 68 publications following the 1936-1939 Civil War; article under evaluation). The present paper describes another period of heavy consumption of grasspea in Spain (in Madrid) during the 19th century Peninsular War, moments of which were captured during his residency by the Spanish artist Goya.

Francisco de Goya (Fuendetodos, 30 March 1746 — Bordeaux, 16 April 1828), the famous painter, witnessed the devastation suffered by Zaragoza in the first siege of the city by Napoleonic troops during the Peninsular War. He met General José de Palafox, 1st Duke of Zaragoza, who encouraged him to undertake a "patriotic album" where tragedy and heroism were captured for posterity. This was the fuse that stimulated Goya's *The Disasters of War*, a series of engravings chiseled on copper plates and later printed on sheets of paper.

Goya resided in Madrid during its occupation by Napoleonic troops, which made him an exceptional witness to the turbulent events. Over the course of five years (1810-1815), the brilliant artist made 82 engravings, now in the Prado Museum in Madrid (www.fundaciongoyaenaragon.es). Those were dangerous times and *The Disasters of War*, in which he denounced the abuses of the occupying troops, only circulated among highly trusted friends; in fact, he never published his prints.[3] Two sets were eventually printed, one of which was given by Goya to his friend, the Asturian

Juan Agustín Ceán Bermúdez[1] (1749-1829),[A] an erudite historian, painter and collector who was instrumental in the conservation of *The Disasters of War*. They were bought from the heirs of Ceán by the collector and writer Valentín Carderera Solano (1796-1880), a character who recognized the value of the engravings. They were eventually acquired by the State, and the Royal Academy of Noble Arts of San Fernando published in 1863 "the collection of eighty plates invented and etched by Don Francisco de Goya" (www.ceanbermudez.bne.es).

The Disasters of War exposes in all their crudeness the atrocities committed by both sides during the six years (2 May 1808 to 17 April 1814) of Napoleonic occupation. Some of the prints also deal with the consequences of the conflict on the civilian population (plates 48 to 64). Among them, the brutal famine that devastated the city of Madrid. *Thanks to the grasspea*, a 156 × 205 mm etching and burnished aquatint (Figure 1) corresponds to engraving no. 51 of the series and alludes to the years of extreme food shortages, beginning in September 1811 and culminating in 1812, a humanitarian catastrophe that has perhaps received little attention historically.

While *Thanks to the grasspea* has been reproduced on numerous occasions, the meaning of the scene and the message Goya wanted to convey have never been studied. The objective of this communication is to analyze the characters, to ask why the people of Madrid at the time should have been grateful to the grasspea, and to show the context in which the scene took place.

Material and methods

The Bibliographic Information Service of the National Library of Spain (BNE) provided publications related to the objective of this work. Through the BNE Newspaper Library, the Madrid press for the year 1812 was searched for potentially interesting data, such as food consumed by the population, food use of grasspea, and possible ongoing epidemics. The online page of Aragón Goya Foundation (https://fundaciongoyaenaragon.es) offers detailed chronological information of considerable interest on the life and work of the painter Francisco de Goya, in its historical context. *The Disasters of War* plates were obtained from the *Collection of eighty plates invented and etched by Don Francisco de Goya* available in the Miguel de Cervantes Virtual Library (https://www.cervantesvirtual.com/descargaPdf/los-desastres-de-la-guerra-coleccion-de-ochenta-laminas-inventadas-y-grabadas-al-agua-fuerte-975563/). Finally, reference was made to lathyrism epidemics that took place in Spain during the 19th century and their relationship with the consumption of grasspea.

Results

Goya witnessed the popular uprising in Madrid against the Napoleonic invasion. Some of his most famous paintings give a specific account of several episodes. The most famous event is commemorated by the tombstone commemorating the First Centenary of 2 May, which is located approximately in front of the entrance gate of Madrid's Royal Palace. It was erected in 1908 by the Fine Arts Circle of Madrid under the presidency of Mayor Alberto Aguilera (Figure 2). The tombstone is precisely where, on the morning of 2 May 1808, the popular locksmith José Blas de Molina Soriano harangued an indignant crowd when the horse-drawn berline carriage with the royal infants Don Francisco de Paula and Don Antonio inside was about to leave for Bayonne, France. The crowd began to harass the French soldiers, killing one of them. This is considered to be the precise moment the Spanish War of Independence began.[3(p198)] Pérez Galdós [4] described one version of this event:

> The first hostile movement of the assembled people was to surround a French officer who was passing through the Plaza de la Armería at the time […]. Very soon he was joined by another Spanish officer, who came to the aid of the first. […]. The presence of gunners […] a terrifying detonation froze the blood in my veins, and I saw some people wounded by shrapnel fall not far away.[B]

Under the pretext of avoiding another attack, an attempt was made to marginalize Spain's King Alfonso XIII (1886-1941) from the many pageants organized to celebrate the event, which ultimately did not happen.[5]

[A]Not to be confused with Francisco Cea Bermúdez, from Malaga, negotiator as representative of the Courts of Cádiz with Tsar Alejandro (BNE blog). An important street is named after him in Madrid.

[B]Two pieces of guns of the Grenadiers' Batallion of the Imperial Guard were located at the top of Calle del Factor, overlooking Plaza de la Armería, beside some sections of the Arabic city wall erected in the ninth century. The street name refers to Fernán López de Ocampo, appointed as a Factor by King Philip II. The dictionary of the Royal Spanish Academy defines the term as: "A royal official in the Spain's American territories who was responsible for collecting rents and paying tributes in kind belonging to the Crown."

Figure 2. Memorial stone at the place where the popular uprising took place on 2 May 1808. The original was probably destroyed in later ups and downs of history. It was replaced by the Madrid City Council in 1947 (photograph by the author).

However, the small monument, like others of monarchical significance, was destroyed but was replaced by Madrid's City Council in 1947.

The disasters of war

Before Spain's Peninsular War (1808-1814), life smiled on Francisco de Goya, the son of a modest altarpiece gilder. Despite his deafness, a consequence of the serious illness he suffered at the age of 46,[6] he had become court painter to Spain's King Charles IV and María Luisa of Parma, and his wealthy status even allowed him to acquire a residence at number 15 calle Valverde in Madrid. After the Napoleonic invasion, as a resident of Madrid, he witnessed violent scenes of repression, in addition to the famine suffered in the capital during 1881 and 1882. It took him five years (1810-1815) to complete the 82 plates that make up the series *The Disasters of War* (www.fundaciongoyaenaragon.es). The corresponding plates are kept in the Spanish National Chalcography (catalogue, no. 302).

Thanks to the grasspea

Engraving 51 was produced from a preparatory sketch using the burnished aquatint and etching technique. It depicts several characters. In the sketch, we may count six adults (four standing, one leaning, one laying) surrounding a large pot, the faces of two standing children, close to the pot, and two more children (a girl and a boy) standing to the left of the adults. Six figures surround a pot of considerable size that rests on the ground (Figure 2). Judging by the title that Goya handwrote at the bottom of the engraving, the pot contains grasspea, presumably cooked as the traditional dish "gachas manchegas." It must be cold, as the heads and bodies of several figures are covered with rags. The figures have sunken eyes and emaciated faces suggesting they are starving. On the right, the stooped profile of an old woman leans over the food brandishing a spoon, perhaps waiting her turn. The scene leaves no room for doubt that it is a community relief meal in the middle of the street.

Turning our attention to the woman lying on the ground, Goya places her in the foreground and thus gives special relevance to the scene. The woman is lying on her side, knees somewhat flexed (typical of late lathyrism), holding a ladle in her right hand and a bowl in her left hand that she appears to hold out to the three standing adults. She has reached the pot by crawling on the floor; surely, she had no other way of moving. Since she is able to raise her head, look at the porridge in the cauldron and bring hold and manipulate a spoon, her disability appears to be limited to her legs, consistent with lathyrism. Since she was probably not the only case of putative lathyrism in Madrid, the multiplication of similar cases would make the food, particularly the bread, a suspected etiological agent, to the point that the city authorities, even under an occupying force, issued a notice alerting the population to some food risks.

In *Diario de Madrid* newspaper, dated 2 July 1812, a statement was published with warnings from the highest authority of the city about "the malignancy of some mixtures in bread, which could harm public health and the punishment that this would entail":

> D. Manuel García de la Prada, Knight of the Royal Order of Spain, Mayor of this Town:
>
> Having observed that due to the current scarcity of wheat, and the rise in the price at which it is sold, various bread makers have devoted themselves to making flour from barley, corn, **grasspea**, carob beans, and other seeds (as cheaper food is provided to the poor) [that] **can be detrimental to public**

Figure 3. Preparatory sketch for *Thanks to the grasspea*, in sanguine on laid paper, 169 × 220 mm. It belonged to the Carderera Collection before moving to the Prado National Museum in Madrid.

health, either due to the inappropriateness of some of said species, or due to the **malignancy of other strange ones**, whose mixture they facilitate […]. I make it known to the aforementioned manufacturers, that if as a result of the frequent analyses that will be made of the various kinds of bread that are offered for sale, one is found that, due to ignorance or sordid speculation of the manufacturer, has a mixture of seeds or other foreign matter, positively harmful to public health, he shall be treated with all the rigor of the laws as an attacker on the life and preservation of his fellow citizens […]. [emphasis added]

I have ordered that copies of this be fixed in the usual places and that it be inserted in the *Madrid* newspaper on 1 July 1812. Manuel García de la Prada, by order of SS, the secretary of the municipality Juan Villa y Olier.

Goya usually drew sketches of the figures that would later form part of the engraving (Figure 3). The sketch *Thanks to the grasspea* was drawn on thick, poor-quality paper, but otherwise differs little from the final engraving. Thus, the small figures to the left of the group confirm that they correspond to two children; several diners carry containers, no doubt to take home part of the stew, while the recumbent figure holds up a huge spoon with the evident intention of placing it into the deep container.

The 1811- 1812 Madrid famine

Miguel Ángel Almodóvar, in his work *El hambre en*

Figure 4A. Plate 40, entitled *Charity of a Woman*. A lady in an elegant hat helps a dying family group in the middle of the street. The well-fed clergyman who accompanies her has been interpreted as an anticlerical wink by the painter.

España ("Hunger in Spain"),[7] collects the notes of André-François Miot de Mélito (1762-1841), minister, ambassador, and adviser to Napoleon, on the origin of the food shortage in Madrid. "The French army, on its way to Portugal, passing the Tagus, had already requisitioned all the cereals that it found on its path, depleting the provinces of Toledo and Talavera, which supplied a good part to Madrid."[7,p.148] Guerrilla parties operating in La Mancha, and the French troops themselves, requisitioned food supplies for their own consumption, making it impossible for them to reach the capital.

In November 1811, when hunger began to be felt, the so-called "ammunition bread" that was normally supplied to inmates was allowed to be distributed to the population. It consisted of a small amount of wheat mixed with corn, barley, rye, or grasspea, producing a sour, yellowish bread. The Madrid Economic Society pointed out in 1812 that a quarter of the bread consumed was made exclusively with grasspea flour, "of good appearance and not bad taste."[8] The writer and chronicler Mesonero Romanos (1803-1882) always kept a crust of stale bread in his desk in memory of those tragic events that he lived through as a child.[9]

Of the 82 engravings that Goya dedicated to *The Disasters of War*, 18 (from 48 to 65) are expressly dedicated to the famine in Madrid. In addition to epidemic diseases, such

Figure 4B. Plate 52, entitled *They don't arrive on time, help arrives when there is nothing to do*. A woman has just died in the middle of the street, when she is helped by three women, who may represent a Pietà.

as putrid fevers and *tabardillo* (typhus rash), it took the life of more than 25 000 inhabitants, at a time when the capital had a population of 175 000. Twice a day the parish carriage was sent to carry the corpses found in the street to the cemetery. We selected a pair of engravings that give a good example of the situation. In engraving 49, entitled *Charity of a Woman* (Figure 4A), an elegant lady accompanied by a stodgy clergyman, an anticlerical wink from the painter, approaches a dying family to offer help. Number 52, entitled *They don't arrive on time*, denounces the lack of help: the woman who has just died can only be incorporated by three female figures, perhaps representing a Pietà (Figure 4B).

Hunger in Madrid (1818), an oil painting by the historicist painter José Aparicio Inglada (1773-1838), dramatizes the desperate situation on the streets of Madrid. Joseph I Bonaparte, as new King of Spain (Figure 5), had ordered bread to be distributed among the people of Madrid, which a character in the painting rejects with dignity. The aggressiveness of another figure is barely contained by his wife. An old man remains seated, stoic before the death of his daughter and a small child at his feet. Meanwhile, in the lower right-hand corner, a starving individual greedily devours rotten cabbages, the normal destination of which would have been the garbage dump; another figure begs to partake of the dubious rations.

Figure 5. Silver coin of 20 reales, minted in 1811 with the effigy of Joseph I Napoleon; Unlike the "real de vellón" of the time, this one contains an alloy of copper and silver (Author's collection).

Aparicio was a faithful court painter to King Ferdinand VII, but, after the death of the satrap in 1833, he went into decline, dying, according to his biographers, "poor and miserable" (Figure 6).

Discussion

It is unclear whether Goya's goal in *The Disasters of War* was to document abuses and crimes of the Napoleonic occupation of Spain in particular or, while achieving this goal, also to portray the disastrous effects of war in general. Sixteen of the 82 plates addressed the 1812 famine in Madrid, among which is the engraving *Thanks to the grasspea*, alluding to a hardy legume well known to paralyze the lower limbs with prolonged, heavy consumption.

We propose that the female subject on the ground appears to represent the first representation of a patient with lathyrism. In 1904, the military doctor Andrew Buchanan[10] studied an epidemic of lathyrism that affected thousands of people in Sagar, Madhya Pradesh, India. He classified the severity of paraparesis according to the amount of assistance required to walk: no stick, one stick or two sticks. In the most severe advanced stage of lathyrism, the patient moves by crawling on the ground. In the absence of a wheelchair, the tendency to cross the legs at the ankles due to extreme spasticity forces patients to crawl either on their elbows, knees, or on their rump. Although males are more commonly and severely impacted by lathyrism, 10 females in the crawler stage are described in India. This could have been the situation of the woman that seems to have impressed Goya when he sketched the scene.

In the Spanish epidemic of lathyrism after the Civil War (1936-1939), subjects in the crawler stage were infrequently described. Thus, at least two patients are known to have reached the crawling stage: the Tolosa stoker who consumed more than 500 g of grasspea daily for seven months,[11] and the case reported by Aldama Truchuelo and Mateos.[12] Both patients underwent an exploratory laminectomy after being confined to bed, and the authors were possibly disconcerted by its rarity among the approximately one thousand cases of lathyrism that occurred throughout Spain.[13]

One wonders why Goya assumed that the famine perhaps could be palliated precisely "thanks to the grasspea," a legume consumed in the Iberian Peninsula from the early Neolithic period[14] to the present day.[15] A 19th-century treatise on the plants of Spain, including *L. sativus*, ensures they are cultivated "in many places, although the food with its flour was used by poor people."[6(p120)] The grasspea plant has the peculiarity of growing even in arid lands, requiring little water and only basic care, thus making it a precious resource in times of food scarcity. In the lathyrism epidemic after the Spanish Civil War, Jiménez Díaz and Vivanco[17] were surprised by the healthy appearance of the patients, despite being fed exclusively on grasspea, which is explained by its high protein and caloric content. In fact, the different members of the *Lathyrus* genus are today considered a crop with a future precisely because of their tolerance to environmental extremes and high protein content.[18]

Two epidemics of lathyrism have been documented in Spain.[7] In 1873, when lathyrism still lacked a name, Azañón disease was masterfully described by Alejandro San Martín Satrústegui (1847-1908), then a humble editor of the popular weekly *El Siglo Médico*, and

Figure 6. *The hunger of Madrid*, by the painter Aparicio Anglada, represents a street scene in Madrid in 1812, between the fury, hunger, death, and the hypocritical help of the invader. Oil painting measuring of 315 × 437 cm, currently in the Museum of History of Madrid.

eventually a famous professor of surgery at the Colegio de San Carlos in Madrid.[19,20] Second, the post-Civil War epidemic in Spain has been studied and described to date by several authors.[21,22] It is not unreasonable to propose that, in 1812, there were probably many cases of lathyrism in Madrid, and not just that of the unfortunate woman drawn by Goya. Further research might reveal references to the disease in state archives, parish death records, and other historical sources.

The military and political events that occurred in Spain since the occupation of the throne by Joseph I Bonaparte, "the intruder king" (7 July 1808) and the return of Fernando VII (13 March 1814) had serious consequences for Goya. His painting *Allegory of the city of Madrid* (Figure 7) depicts an ostentatious crowned lady leaning with one hand on a shield with the allegorical figures of Madrid, so-called "Villa del oso y del madroño" (town of the bear and the strawberry tree), while pointing with the other to a large oval. The French king (to whom Goya had been forced to swear fealty, under threat of his belongings being requisitioned) asked Goya to include his face in the picture.[23] After their defeat in the battle of Arapiles, near Salamanca, on 22 July 1812, the French troops withdrew from Madrid and the new City Council ordered to change the king's face to the word *Constitution*, in memory of the Courts of Cádiz. Years later, Goya painted Fernando VII on the famous oval, but the result was so abominable that another painter had to redo the monstrosity.[24] It was not until 1873 that, after six changes, the painting with the current motto

Figure 7. *Allegory of Madrid*, and its conflicted oval. Oil on canvas, 260 × 195 cm. Museum of History of Madrid (previously, Municipal Museum). The sixth, and until now, definitive change was commissioned from the painter Vicente Palmaroli.

Figure 8. Self-portrait of Goya, painted in 1815 when was 69 years old and very ill. Aragón Foundation.

"Dos de Mayo" (Second of May) was left at the Museo de la Villa in Madrid.

The return of the absolutist King Ferdinand VII, desired but soon detested, meant that the Spaniard Goya had to face a Purge Commission under the accusation of having been "Frenchified",[25] that is, a bad patriot and collaborator (Figure 8). He was finally rehabilitated on 14 April 1815 thanks to the good offices of Cardinal Bourbon. In the self-portrait from the same year, the artist is shown as a sick and finished man at 69 years of age. Unable to accept absolutism and the persecution of liberals during the "ominous decade," Goya went into self- exile in Bordeaux with his partner Leocadia Zorrilla, 47 years younger. He continued to work in the company of the many exiled Spaniards, among them his good friend the playwright Leandro Fernández de Moratín.

Goya died on 16 April 1828, when he was 84 years old. He was buried in the La Chartreuse cemetery, Bordeaux, and in 1900 the Spanish government obtained the transfer of his remains to the hermitage of San Antonio de la Florida in Madrid. Why his skull was missing has never been clarified.

Conflicts of interest

The authors have no conflicts of interest to declare.

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