



How royals feasted in the court of Pedro I of Castile: A contribution of stable isotope study to medieval history



S.A. Jiménez-Brobeil^{a,*}, Z. Laffranchi^{a,1}, R.M. Maroto^{a,1}, F.A. López Sánchez^{a,1}, A. Delgado Huertas^b

^a Department of Legal Medicine, Toxicology and Physical Anthropology, Faculty of Medicine, University of Granada, Spain

^b Biogeochemistry of Stable Isotopes Laboratory, Andalusian Institute of Earth Sciences (IACT-CSIC-UGR), Avenida de las Palmeras 4, 18100 Armilla, Granada, Spain.

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ABSTRACT

Study of the human remains of King Pedro I of Castile (1334–1369), his wife Queen Maria of Padilla (c. 1334–1361), and three other members of his family offered the possibility to investigate the diet of an elite in the medieval Iberian Peninsula by analyzing $\delta^{15}\text{N}$ and $\delta^{13}\text{C}$ values in collagen samples of their bones. Two medieval archeological samples were selected for comparative purposes: a Christian sample ($n = 5$) from Palacios de la Sierra (Burgos), and a Muslim sample ($n = 5$) from La Torrecilla (Granada). Results obtained were compared with published data on other medieval populations of the Iberian Peninsula with the aim of improving knowledge on the diet of medieval populations, especially elite groups. Differences in the consumption of C3 and C4 plants were observed between Christians and Muslims, as previously reported. $\delta^{15}\text{N}$ values indicated social class differences. The diet of the Royal Family was characterized by mainly C3 plants and an extremely high animal protein intake characteristic of carnivores. These results are consistent with historical data on the life circumstances of this family.

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1. Introduction

In September 2012, a study was conducted on the contents of boxes from the crypt of the *Virgen de los Reyes* Chapel in Seville Cathedral (Southern Spain) holding the mortal remains of King Pedro I of Castile (1334–1369) (Fig. 1), his wife María de Padilla, his son Prince Alfonso, his illegitimate son Juan de Castro, and his stepbrother Fadrique de Castilla. King Pedro was one of the most famous and controversial monarchs of the European Middle Ages. The 14th century was an especially tumultuous period of European history, in which climatic change at the beginning of the Little Ice Age (Fagan, 2000) coincided with poor harvests, famine, the Black Death epidemic, and a social and economic crisis. The kingdom of Castile not only engaged in wars with other peninsular kingdoms but also suffered internal conflicts exacerbated by the disruption of traditional sources of income and changes in power relationships. The situation worsened in 1350 with the death from bubonic plague of King Alfonso XI, who was succeeded by Pedro I, his legitimate son. King Alfonso had fathered other children with his mistress Leonor de Guzmán, including Enrique, count of Trastámara (later King Enrique II). Enrique became leader of a party that brought together most of the

Castilian nobility (Barrios, 2001) in resistance to losses of their privileges and in rebellion against King Pedro (Ladero, 2010; Passolas Jáuregui, 2011), leading to a civil war that became an extension of the Hundred Years' War. King Pedro confronted Enrique in 1367 at the battle of Nájera. The former was supported by an English army commanded by Edward the Black Prince and his brother John of Gaunt, Duke of Lancaster, while Enrique was supported by a French army under Bertrand du Guesclin (Sumption, 2009). The Anglo–Castilian army won the battle, but Enrique fled and King Pedro had insufficient funds to continue paying for the collaboration of the English army. In 1369, at the battle of Montiel, Enrique killed the King in hand-to-hand combat with the aid of a French knight. There are various contemporary chronicles of this event, e.g., by Jean Froissart (online) and López de Ayala (1779). This act ended the legitimate dynasty and put the illegitimate son of Leonor de Guzmán on the throne, starting the Trastámara dynasty. In 1388, the Treaty of Bayonne ended the dynastic rift by unifying the two lines of succession of King Alfonso XI (Valdeón Baroque, 2001).

Our study of the health of King Pedro and his family included stable isotope analysis based on bone collagen, which yields information on diet and possible geographic movements (Goude and Fontugne, 2016; Reynard and Hedges, 2008; Schoeninger and Moore, 1992; Van Klinken et al., 2000). The most frequent analyses of skeletal remains are based on carbon ($\delta^{13}\text{C}$) and nitrogen ($\delta^{15}\text{N}$) isotope ratios. Carbon findings reflect the ecosystem and the consumption of type C3 or C4 plants (DeNiro and Epstein, 1978; Van der Merwe, 1982), while nitrogen mainly indicates the position of an individual in the food chain, given that its value in bone collagen is 3–5‰ higher in predator than

* Corresponding author.

E-mail addresses: jbrobeil@ugr.es (S.A. Jiménez-Brobeil), zitalaffranchi@gmail.com (Z. Laffranchi), rmmaroto@ugr.es (R.M. Maroto), fasisls@hotmail.com (F.A. López Sánchez), antonio.delgado@csic.es (A. Delgado Huertas).

¹ Postal address: Departamento de Medicina Legal, Toxicología y Antropología Física, Facultad de Medicina, Avenida de la Investigación, 18016 Granada, Spain.



Fig. 1. General view of the skeletal remains of King Pedro. Photograph by the authors.

in prey (Ambrose, 1991; Bocherens and Drucker, 2003; DeNiro and Epstein, 1981; O'Connell et al., 2012). The consumption of marine products can be estimated according to the combination of nitrogen and carbon values (Richards and Hedges, 1999; Schoeninger and DeNiro, 1984). Because isotope values reflect the diet consumed during a period of several years before death (Hedges et al., 2007), and the diet depends on local ecosystems, changes in these values may suggest possible migrations (Herrscher and Le Bras-Goude, 2010; Goude and Fontugne, 2016). Dietary variations can also indicate differences in social status (Choy et al., 2015; Pearson et al., 2013; Privat et al., 2002).

The main objectives of this study were to estimate the diet of King Pedro I and his family from isotope analyses, to relate findings to contemporaneous historical information on diet and geographic movements, and to assess the nutritional situation of the Castilian elite of the 14th century. This represents the first isotope analysis conducted in Spain on medieval personages.

2. Material and methods

Three sources were used in this study: samples from the five historical personages, samples from archeological excavations at two medieval sites of the Iberian Peninsula, and data from other studies on medieval archeological populations of the Iberian Peninsula. We report biographic data on the Royal Family and an evaluation of their maxillo-dental status, followed by a description of the study sample sites.

2.1. Pedro I of Castile

King Pedro I of Castile (*Burgos, 30-08-1334; †Montiel, 23-03-1369)(Fig. 2) was a charismatic character who was both loved and

hated during his lifetime and corresponded to the prototype romantic hero *par excellence*. Authors such as P. Calderón de la Barca, Voltaire, P. Mérimée, J. Zorrilla or A.C. Doyle have dedicated writings to this figure, and he also appeared as the main character in legends and romances (Cómez Ramos, 2006). The 16th century historian Gerónimo de Zurita (from the edition of the writings of Chancellor López de Ayala published in 1779 and comments on these by Gerónimo Zurita) claimed that the king suffered from no disease and “had good eating and drinking habits, eating little”. The skeleton is incomplete, with taphonomic alterations of the cortex of various bones. The maxilla is preserved with the sockets of all teeth, which were lost *post mortem*, showing no evidence of alveolar resorption.

2.2. María de Padilla

This lady from a noble family (*Astudillo, 1334; †Seville, 1361)(Fig. 2) became the king's mistress. She was reputedly the woman most loved by the monarch and bore five of his children. All ancient chroniclers lauded her beauty and her kind and discreet nature, while the romantic literature of the 19th century presented her as a woman with great erotic and sensual appeal. After her death, King Pedro I announced that he had married her in secret and officially declared her as legitimate Queen (López de Ayala, 1779; Ros, 2003). The skeleton is virtually complete and well preserved. Seven teeth are preserved, one with caries, while the rest were lost *post mortem*. There is one fistulation of a possible periapical granuloma (Fig. 3), and there are mild plaque deposits. Grade 4 tooth erosion (Smith, 1984) is observed.

2.3. Prince Alfonso

The first male son of King Pedro I and María de Padilla (*Tordesillas, 1359) was named heir to the throne and died in Seville in 1362 at the age of three-and-a-half years (López de Ayala, 1779). The skeleton is incomplete but the bone tissue is well preserved. One deciduous molar and the crowns of three unerupted permanent molars are present. His height and development are appropriate for his age, and no indicators of metabolic stress are detected.

2.4. Juan de Castro

Juan de Castro was the son of King Pedro I and the noblewoman Juana de Castro, born in 1355. Although considered illegitimate, he was legitimized by King Pedro in his testament after the death of Prince Alfonso. In 1371, he was imprisoned by order of King Enrique II and sent to the castle of Soria (Fig. 2), where he remained confined. Juan de Castro died in Soria in 1405 at the age of 50 (Escobar and Escobar, 2012). The skeleton is incomplete (lacking most bones of hands and feet) but well preserved. Six teeth without caries are preserved in maxilla and mandible. Except for 1 M, the rest of the teeth were lost *post mortem*. There are no indicators of periodontal disease. Grade 4 dental erosion is observed. There are no signs attributable to conditions of hardship.

2.5. Fadrique de Castilla

He was born in 1333 as the illegitimate son of King Alfonso XI, twin brother of the future King Enrique II and stepbrother of King Pedro I. He always collaborated with his brother Enrique in confrontations with the legitimate monarch (Barrios, 2001). He died in Seville in 1358 at the age of 25, when King Pedro I ordered his death for high treason. According to the chronicle of Chancellor López de Ayala (1779), he received several blows with a mace inflicted by the king's crossbowmen and was finished off with a dagger provided by the monarch himself. There are many missing pieces of the skeleton, including cranium and mandible.

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