

# The Islamization of Iberian Peninsula: A demographic shift or a cultural change? Search for an answer using extant and ancient DNA from Mértola (Southeast Portugal)

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**Abstract.** Studies on extant mtDNA in Mértola, an archaeological jewel of the Islamic Period in Portugal showed a significantly higher proportion of Southern and Eastern Mediterranean lineages when compared with other general and regional Portuguese databases. This is an evidence for the movement of people through the Mediterranean basin between centres of trade, as the fluvial port of Mértola. Studies on ancient DNA were, unfortunately, inconclusive probably due to contamination due to percolation between overlapped layers of Paleo-Christian and Islamic burials in one necropolis found in Mértola. © 2005 Elsevier B.V. All rights reserved.

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## 1. Introduction

A classical view of the Iberian Peninsula history used to correlate the Islamization with significant demographic migrations from North Africa, but, more recently, acculturation phenomena were advanced as being more significant in places like Mértola, an important roman and medieval fluvial port in southeastern Portugal [1]. The Islamization phenomenon has been intensively studied there since the 1980s. Archaeological excavations at the “Rossio do Carmo”, a funerary area outside the city walls, lead to the discovery of Islamic burials overlapping a Paleo-Christian cemetery. A peaceful conversion of the inhabitants of Mértola after the Islamic conquest may better explain this continuity of use of the early medieval place of burial, rather than a massive introgression of North African people.

In order to evaluate which of the scenarios fits better the available data, we followed two lines of research on both: (a) bones recovered from this necropolis; and (b) the extant population of Mértola.

## 2. Ancient DNA

Three Paleo-Christian individuals (right second metatarsal; 3 upper second premolars and 1 lower second premolar) and one Islamic (right first metatarsal and deciduous lower left canine and first molar) were analysed. These samples span a time range from 5th to 13th centuries AD. The amplification of mtDNA, in all the appropriate conditions for the study of ancient DNA, resulted unsuccessful for fragments longer than 123 bp (quantities of DNA templates were minimal), what pointed to degraded sequences, and the presence of multiple sequences in independent PCRs (some of the results could be real, but it was not possible to infer which sequences were endogenous). This last fact could be due to 3 plausible causes: post-excavation contamination (excluded by absence of matching between spurious sequences and the ones obtained from the survey of the archaeological team); damaged DNA, causing jumps between templates and generating novel sequences (not cleared up by cloning); and contamination during the burial period, presumably by percolation. This last explanation looks the most probable cause for no reliable DNA sequences being achieved from the Paleo-Christian and Islamic cemeteries of Mértola.

## 3. Extant DNA

We sampled 64 individuals from the town and from 6 small villages (Alcaria Ruiva and Mosteiro, ancient pre-Islamic foundation; Alcaria dos Javazes, Islamic foundation; and Santana de Cambas, Christian post-Islamic foundation; Alcaria Longa and João Serra, unknown foundation).

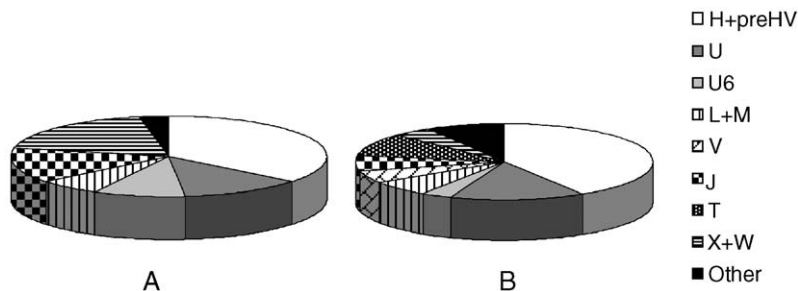


Fig. 1. mtDNA distributions in Mértola (A) and total Portugal (B).

MtDNA survey revealed that its female genetic composition is significantly different from North and Central Portugal ( $p_{F_{ST}}=0.000+-0.000$ ), and even from the South of the country ( $p_{F_{ST}}=0.030+-0.002$ ), where Mértola is included. Data for these Portuguese databases were published before [2].

Relative to the haplogroup distribution (Fig. 1), North African lineages are more frequent in Mértola (9.4%) than in any other region of the Iberian Peninsula (the highest is 5% in North Portugal), and the sub-Saharan ones are scarcer than in Southern Portugal (6.3% comparatively to 11.4%), while Near/Middle Eastern lineages are much more common (32.8% relatively to 10.9% in Portugal).

#### 4. Conclusions

The female lineages from the extant population of Mértola bear a higher proportion of typical components of the Southern and Eastern Mediterranean when compared to other regions of Portugal. Unfortunately, we could not verify the presence of these lineages in the ancient samples and the possible introgression of the new individuals in the autochthonous families.

These results genetically support the hypothesis advanced by archaeologists of Mediterraneanization instead of Islamization [1], in some Islamic centres in Iberian Peninsula. Some geographically privileged spots were important trade centres since Bronze Age, through Roman and Islamic periods, and Mértola was one of these centres in Southeast Portugal. This hypothesis can be viewed in the broader concept (both at geographic and time scales) of a “Gateway Community” defined by Hirth [3], consisting in a redistribution economy via the institutionalization of long distance exchange. Other examples of this phenomenon in Europe are the Greek Colonies of the Mediterranean (600 BC to 400 BC) [4].

This work seems to show that some places, at a micro-regional scale, can still bear nowadays a significantly different genetic background reflecting ancient important trade centres as attractors for people focused migration, thus confirming the demographic shift along with the cultural change. In addition, it demonstrates that collaborative projects between Archaeology and Population Genetic teams can contribute with valuable insights into past migrations.

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