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# Ancient Walls Covered With Powdered Animal Bones

By **Robert Roy Britt**, Editorial Director  
posted: 17 January 2009 11:31 am ET

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Scientists have discovered a 14th century brick oven made to bake animal bones for a strange purpose.

The burned bones were made into a powder, then mixed with other material to make a protective coating to strengthen the grand [medieval](#) walls of a Muslim structure in what is now Granada, Spain.

Decorative and protective layers, called [patinas](#), cover the outsides of many buildings built by [ancient civilizations](#). The ancients were quite the chemists. Ingredients often included lime or gypsum, plus quartz, feldspar or clay minerals. Iron oxides and hydroxides were added for color. Organic ingredients ranged from milk and eggs to oil and wax and even blood and urine, the researchers note.

The new study ties the oven's purpose with the patina on a wall.

"This is the first report of burnt bones in a patina on a Muslim monument, as well as the archaeological artifacts — the oven and raw materials — used to produce them," said study team member Carolina Cardell of the University of Granada.

Using a new method to identify the components of historical artifacts, the team found hydroxyapatite, the main component in bone pigments and animal bones, in the patina of Granada's medieval walls. Their new test is inexpensive, identifies chemicals more accurately and — most importantly — does not harm the historical artifacts.

The findings were detailed this week in the semi-monthly journal Analytical Chemistry.

Powdered burnt bone have been identified in patinas used in Greco-Latin, Celtic, and Medieval Christian monuments, the researcher write, "but never, to our knowledge, in Medieval Moorish constructions."

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Scientists have found a 14th century oven used to bake animal bones for the purpose of strengthening the grand medieval walls in what today is Granada, Spain. This Moorish rampart, built by the Nasrid ruler Yusuf I, shows its aging patina. The wall has circular holes about 4 inches (10 cm) in diameter. Credit: American Chemical Society

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**NekoMimi** wrote:

Why is this strange? They were just using what they had... It does seem like a waste of fuel to burn bones in to a powder when there are less costly alternatives but if they found that this powder worked... Why not use what you have and not throw the bones away?

Just because Bones are used doesn't make this strange or nasty... We have a VERY distorted view on what is acceptable...

posted 1/17/2009 11:26:22 PM

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**kilngod** wrote:

I don't get the sensationalism of the title of the article or the notation of this being a Muslim "find". Any elementary potter can tell you that the "ingredients" used are basic glaze componets. Furthermore, artists, especially painters know that blood and urine have been used for centuries as color pigments. Most all of these materials are still commonly used today in modern ceramics and color manufacturing. I think this article speaks more on the ignorance of art history, art appreciation and chemistry than it does on "new historical findings". It is a shame that our school curriculums have focused more on "testing skills" rather than the basic understandings of the world we live in and cultures including our own that now seem exotic to so many of us. Hopefully, in the years to come we will overcome the dumbing down of the human mind caused by fundamentalism and intolerance to once again become a world of enlightened as were the Muslims who gave us abstract mathematics, Greeks who gave us philosophy and Americans who gave us ingenuity. There in lies a world of great potential and