



## It's Time to Entrust Saint Januarius's Blood to Microchemistry

Bruno M Strangio<sup>1</sup>, Francesca Riotto<sup>2</sup>, Giovanni Fazio<sup>3</sup>

<sup>1</sup>University of Campania Luigi Vanvitelli, I-80138 Napoli, Italy

<sup>2</sup>Diocese of Oppido Mamertina-Palmi, Via Rocco Pugliese38, I-89015 Reggio Calabria, Italy

<sup>3</sup>University of Messina. Department of Mathematical and Computer Sciences, Physics Sciences and Earth Sciences. Viale Ferdinando Stagno d'Alcontres 31, I-98166 Messina, Italy

### Correspondence

**Giovanni Fazio**

University of Messina. Department of Mathematical and Computer Sciences, Physics Sciences and Earth Sciences. Viale Ferdinando Stagno d'Alcontres 31, I-98166 Messina, Italy

### Abstract

*This article, which follows two of our previous writings, emphasizes the need to analyze a small sample from the ampoules containing the blood of Saint Januarius, preserved in the Cathedral of Naples, through microchemical methods. This step is essential to definitively determine the nature of the substance within. This action would be in the interest of both the Roman Catholic Church and the faithful. Saint Januarius was martyred at the beginning of the 4th century AD, and the first blood liquefaction event occurred at the end of the 14th century AD. Therefore, this event took place in the Middle Ages, a time when many false relics were circulating in Europe. We believe this request should be granted, at the very least, it should be possible to implement the recommendations outlined in our first article.*

Recently, we investigated the blood of Saint Januarius [1,2], an important relic for Christianity, as it is venerated worldwide, especially among Neapolitans, who are found across the globe. The blood, preserved in the Cathedral of Naples, is contained in two ampoules housed in a reliquary. The liquefaction of the blood can only occur on three specific days each year (the first Saturday in May, 19th September, and 16th December), a process that is triggered by shaking the ampoules.

For the Roman Catholic Church, the liquefaction of the blood on these designated days is not considered a miraculous event but rather a "prodigy." On these days, the relic is displayed for the faithful, and when the ampoules are shaken, the substance inside may liquefy. Generally, this is what happens. However, although the Church does not view this as a miracle, for the faithful, it is indeed a miraculous event.

The absence of liquefaction on one of these key days is seen by the faithful as an omen of impending disaster. There is extensive literature describing the social consequences of such events, which can be both positive and negative [3-12]. The liquefaction of the blood of Saint Januarius is always expected, desired, and accepted by the Neapolitan people in Naples and in other cities where the Neapolitan community is significant, such as San Paolo, Buenos Aires, Rio de Janeiro, and Sydney.

These events and behaviors have been ongoing for centuries, although some critical

voices may have been overlooked. Until the late 1980s, scientific understanding was based on two spectroscopic analyses (one in 1902 and another in 1989), but above all, on the faith of the people. The two spectroscopic experiments conducted on the ampoules confirmed the presence of blood, and the established liquefaction provided certainty about the phenomenon, which was then considered supernatural [13,14]. It is worth noting that, for the Roman Catholic Church, this event is a "prodigy," while for the faithful, it is a miracle. The latter will never change their beliefs, regardless of scientific findings.

In 1991, an article published in the prestigious journal *Nature* challenged the procedure discussed above. The authors, members of CICAP (Italian Committee for the Control of Claims of Pseudoscience), did not examine the ampoules themselves but suggested that the ampoules did not contain blood. They proposed that the substance inside might be thixotropic, a material that is solid in its natural state but turns liquid when shaken and then solidifies again over time. The substance was created using table salt, calcium carbonate (from egg shells), ferric chloride (from a mineral called molysite found in volcanic areas), and water [15]. The thixotropic substance they created exhibited some characteristics similar to the blood of Saint Januarius: it had a red-brown color and the ability to liquefy when shaken.

While the two spectroscopic analyses are insufficient to confirm with certainty that the ampoules contain blood, the CICAP experiment is an interesting approach, as it explores the

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phenomenon of thixotropy. The substance produced by CICAP shares some characteristics with the blood of Saint Januarius, including its liquefaction. However, even in this case, the properties of the CICAP-created substance are not identical to the blood (many characteristics are still unknown).

Therefore, it is entirely appropriate to request a sample from the ampoules and submit it for microchemical analysis. The results would provide a definitive and indisputable answer, one that every Christian seeks. In other words, it is necessary to do what was done for another important relic: the Shroud of Turin.

This procedure would also address the criticisms that have been raised among the faithful, which were particularly amplified after the 1991 CICAP experiment, published in *Nature*. It is important to assess the true impact of this publication and not dismiss it, as is sometimes done with writings of Christian Catholic origin on the internet. Such dismissals often lack scientific support and aim to discredit what was reported in *Nature*.

We must also consider the views of Professor Geraci, molecular biologist from the University of Naples. This respected Italian scientist, after analyzing the ampoules of Saint Januarius, confirmed the findings of the 1989 spectroscopic analysis of the Professor Baima Bollone. He also studied blood in an ampoule from the "Eremo dei Camaldolesi" (former convent dating back 16th century) that contained blood from 300 years ago. Given the similarity of the containers, his final conclusion was that the ampoules of Saint Januarius contain blood, but there is no miracle, just chemistry. In other words, the professor claims that the chemical reactions that take place in the ampoule produce the changes in shape and color [16]. However, comparing an article published in *Nature* with an experiment conducted by a distinguished scientist is not straightforward. We would have preferred to see the experimental setup and results published in a peer-reviewed scientific journal.

Today, in a part of the Christian world, there is an overwhelming desire to witness or experience a miracle. This desire can sometimes lead to the belief that anything unexplained is a miracle. This tendency makes us reflect on the actions of Christians who may not fully understand what they are witnessing. On the contrary, experiencing a miracle is easy. In fact it is enough to go to Church and observe, during the Roman Catholic Mass, when the celebrant calls upon the Holy Spirit: the bread and wine, though unchanged in appearance, become the Body and Blood of Jesus Christ. This is a supernatural event. The transformation is instantaneous and, obviously, this is a Miracle. The above change in substance is known as transubstantiation.

Finally, let us remember that the Christian Creed is not

founded on relics. So, if all the relics in the world were fake, nothing would change for the Christian.

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### Conflict of Interest

The authors of this article declare no conflict of interest.

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