

Peer Review

Review of: "Polyethylene Terephthalate (PET) Primary Degradation Products Affect c-di-GMP-, cAMP-Signaling, and Quorum Sensing (QS) in *Vibrio gazogenes* DSM 21264"

Alessandro Satta¹

1. University of Padua, Italy

The authors present an investigation into the potential degradation of plastic substrates polyethylene and polyethylene terephthalate by the marine bacterium *Vibrio gazogenes* DSM 21264. The study focuses on the activity of the *pet6* gene, previously characterized in vitro as capable of degrading PET substrates. This work is methodologically solid, as the authors employ a comprehensive array of chemical and biological analyses to elucidate the role of *pet6* in plastic degradation. These include: UHPLC analysis to detect plastic enzymatic degradation, RefSeq-based transcriptomic analysis to examine gene expression changes, fluorescence assays to study gene expression dynamics, and scanning electron microscopy to detect potential morphological alterations in *V. gazogenes* exposed to plastic substrates. Additionally, the authors explore the molecular pathways and genes (e.g., those encoding for enzymes with functions of nucleotidyltransferases and quorum sensing regulation) potentially involved in plastic metabolization, providing valuable insights into *V. gazogenes*' metabolic response to PET degradation products and on biofilm formation in the plastisphere. Despite the robust experimental approach, the results indicate that *V. gazogenes* does not exhibit significant plastic biodegradation activity. While these findings do not surpass previously reported plastic-degrading capabilities of other microbial species, they contribute valuable knowledge to the understanding of *V. gazogenes* metabolism and its potential role within microbial plastisphere communities. The article would also benefit from including a negative control (untreated samples) in the PET degradation experiment, highlighted in Figure 2. This would help confirm

that the release of PET degradation products is specifically due to bacterial activity rather than other factors.

Given these considerations, I propose the article as ready for publication, pending a few minor revisions, which I outlined as comments in the attached PDF.

Attachments: available at <https://doi.org/10.32388/KYB1PV>

Declarations

Potential competing interests: No potential competing interests to declare.