Materials Design Analysis Reporting (MDAR) Checklist for Authors

The MDAR framework establishes a minimum set of requirements in transparent reporting applicable to studies in the life sciences (see Statement of Task: doi:10.31222/osf.io/9sm4x.). The MDAR checklist is a tool for authors, editors and others seeking to adopt the MDAR framework for transparent reporting in manuscripts and other outputs. Please refer to the MDAR Elaboration Document for additional context for the MDAR framework.

Materials

Antibodies	Yes (indicate where provided: section/paragraph)	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	No antibodies used	X

Cell materials	Yes (indicate where provided: section/paragraph)	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	No cell lines used	X
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	No cultures used	X

Experimental animals	Yes (indicate where provided: section/paragraph)	n/a
Laboratory animals: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	No Laboratory animals used	X
Animal observed in or captured from the field: Provide species, sex and age where possible	No laboratory animals used	X
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	No model organisms used	X

Plants and microbes	Yes (indicate where provided: section/paragraph)	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)	No plants used	X
Microbes: provide species and strain, unique accession number if available, and source	No microbes used	X

Human research participants	Yes (indicate where provided: section/paragraph)	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	The ethics approval was provided in the Methods. (lines 130-132)	
Provide statement confirming informed consent obtained from study participants.	The ethics approval and informed consent were provided in the Methods. (lines 130-132)	
Report on age and sex for all study participants.	No age or sex reported	X

Design

Study protocol	Yes (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	No trial	X

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	No laboratory investigation	X

Experimental study design (statistics details)	Yes (indicate where provided: section/paragraph)	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination	Lines 124-125	
Randomisation	Randomisation was not carried out.	X
Blinding	Blinding was not carried out.	X
Inclusion/exclusion criteria	Lines 121-124	

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	The number of times of the experiment was provided in the Methods. (line 175-176)	
Define whether data describe technical or biological replicates	Technical and biological replicates were carried out. (line 175-176)	

Ethics	Yes (indicate where provided: section/paragraph)	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	The ethics approval was provided in the Methods. (lines 130-132)	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	No animals studied	X
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	The ethics approval was provided in the Methods. (lines 130-132)	

Dual Use Research of Concern (DURC)	Yes (indicate where provided: section/paragraph)	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval	No dual use research	**X**

Analysis

Attrition	Yes (indicate where provided: section/paragraph)	n/a
State if sample or data point from the analysis is excluded, and whether the criteria for exclusion were determined and specified in advance.	No data excluded	X

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Data were presented as mean ± standard deviation. The experiments were repeated three times in triplicate. Statistical analysis was performed using GraphPad Prism 8.0.2 (GraphPad Software, USA). Differences between the two groups were determined by T-test. P<0.05 was considered statistically significant. (lines 178-185)	

Data Availability	Yes (indicate where provided: section/paragraph)	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	No new data sets	X
If data are publicly available, provide accession number in repository or DOI or URL.	It was provided in the Methods. (lines 108-118)	
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	Data available through freedom of information request	X

Code Availability	Yes (indicate where provided: section/paragraph)	n/a
For all newly generated code and software essential for replicating the main findings of the study:	No new code or software use	
State whether the code or software is available.		X
If code is publicly available, provide accession number in repository, or DOI or URL.		X

Reporting

Adherence to community standards	Yes (indicate where provided: section/paragraph)	n/a
MDAR framework recommends adoption of discipline-specific guidelines, established and endorsed through community initiatives. Journals have their own policy about requiring specific guidelines and recommendations to complement MDAR.		
State if relevant guidelines (eg., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (eg., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.	ICMJE guidelines were followed, as the journal follows ICMJE recommendations for publication.	

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