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.	This study did not use any antibodies.	n/a

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	Yes. (Materials and methods /Para1, page 5/ line 121-122)	
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	This study did not use any primary cultures.	n/a

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	This study did not use any laboratory animals.	**n/a**
Animal observed in or captured from the field: Provide species, sex and age where possible	This study did not use any laboratory animals.	**n/a**
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID	This study did not use any model organisms.	**n/a**

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)	This study did not use any Plants.	**n/a**
Microbes: provide species and strain, unique accession number if available, and source	This study did not use any Microbes.	**n/a**

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.	This study did not need human research participants.	**n/a**
Provide statement confirming informed consent obtained from study participants.	This study did not need human research participants.	**n/a**
Report on age and sex for all study participants.	This study did not need human research participants.	**n/a**

Design

Study protocol	Yes (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	This study is not a clinical trials.	**n/a**

Laboratory protocol	Yes (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.	Yes. (Materials and methods/ para 1-14, page 5-11/ line 120-265)	

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	Yes. (Materials and methods/ para 14, page 11/ line 261-263)	
Randomisation	No data were excluded from the analyses in this study.	**n/a**
Blinding	We were aware of the allocation of samples in each experiment but we did not change any methods of data collection and analysis among sample groups.	**n/a**
Inclusion/exclusion criteria	No data were excluded from the analyses in this study.	**n/a**

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	Yes. (Materials and methods /para 14, page 11/ line 261-263 and corresponding figure legends)	
Define whether data describe technical or biological replicates	Yes. (Materials and methods /para 14, page 11/ line 261-263)	

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.	This study did not need human research participants.	**n/a**
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	This study did not need experimental animals.	**n/a**
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.	This study did not need pecimen and field samples.	**n/a**

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	This study is not subject to dual use research of concern.	**n/a**

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.	The sample or data point from the analysis was not excluded in this study.	n/a

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Yes. (Materials and methods /para 14, page 11/ line 260-261, 264-265)	

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.	Yes. All relevant data are within the paper and its Supporting Information files. (Results/ para 4, page 13-15 / line 331-388 and Supporting Information files)	
If data are publicly available, provide accession number in repository or DOI or URL.	The data are not publicly available.	n/a
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	The data are not publicly available.	n/a

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:	There is no newly generated code and software.	n/a
State whether the code or software is available.	Yes. (page 7-10/line 158-160,191-193, 198-199,222-223,233-239,242-245; Materials and Methods/ para 5,9, 10, 12)	
If code is publicly available, provide accession number in repository, or DOI or URL.	There is no code which is publicly available in this study.	n/a

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.	Yes, we have known that.	
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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