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Reporting Summary

Nature Research wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Research policies, see Authors & Referees and the Editorial Policy Checklist.

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a	Confirmed	
☐	☒	The exact sample size (*n*) for each experimental group/condition, given as a discrete number and unit of measurement
☐	☒	A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
☐	☒	The statistical test(s) used AND whether they are one- or two-sided *Only common tests should be described solely by name; describe more complex techniques in the Methods section.*
☒	☐	A description of all covariates tested
☒	☐	A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
☐	☒	A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
☐	☒	For null hypothesis testing, the test statistic (e.g. *F*, *t*, *r*) with confidence intervals, effect sizes, degrees of freedom and *P* value noted *Give P values as exact values whenever suitable.*
☒	☐	For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
☒	☐	For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
☒	☐	Estimates of effect sizes (e.g. Cohen's *d*, Pearson's *r*), indicating how they were calculated

Our web collection on statistics for biologists contains articles on many of the points above.

Software and code

Policy information about availability of computer code

Data collection	Data was collected using, any maze image J, envision, Agilent 6410 series triple quad LC/MS/MS. Ponemah® acquisition system (DSI).
Data analysis	Graph pad Prism, microsoft excel, any maze, MATLAB (version R2018b, Mathworks), MassHunter data analysis software (Agilent Technologies Inc, Santa Clara, CA 95051 U.S.A.). ChronosFit program.

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors/reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Research guidelines for submitting code & software for further information.

Data

Policy information about availability of data

All manuscripts must include a data availability statement. This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A list of figures that have associated raw data
- A description of any restrictions on data availability

This is given in the manuscript

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☒ Life sciences ☐ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

Life sciences study design

All studies must disclose on these points even when the disclosure is negative.

Sample size	The "power" of the experiments was calculated using Student t distribution for two sample hypothesis and two-factor analysis of variance (ANOVA) for studies with multiple factors. For both tests a normal distribution was assumed with equal variances, confidence limits (α) of 5%, and the number groups (k=6 on average) of animals (n=variable) per group (k). Power calculation resulted in a 97.5% and 95.5% of power for experiments using these tests.
Data exclusions	No data was excluded
Replication	Experiments were conducted on different patches of cells and on different cohorts of animals to ensure reproducibility
Randomization	The drugs are administered to cages of animals in a random fashion so that each of the mice within the same cage will receive the same drug treatment but the cages that are receive the drug treatment are assigned in a random manner
Blinding	The technicians that conduct the drug treatments and data collection are blinded to the treatments and are blinded to the expected outcomes.

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☐	☒ Antibodies
☐	☒ Eukaryotic cell lines
☒	☐ Palaeontology
☐	☒ Animals and other organisms
☒	☐ Human research participants
☒	☐ Clinical data

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Antibodies

Antibodies used	anti-Hemaglutinin (HA) and anti-Na/K ATPase frfom Roche Bioscience
Validation	The anti-HA antibody was verified with non-expressing HA controls. The Na/K-ATPase antibody is a widely used control with manufactures verification.

Eukaryotic cell lines

Policy information about cell lines

Cell line source(s)	This is given in the manuscript but the cell lines used were derived in house
Authentication	The cell lines were authenticated by ligand binding and western blot experiments
Mycoplasma contamination	All cell lines are regularly checked for microplasma and are microplasma free
Commonly misidentified lines (See ICLAC register)	None we used

Animals and other organisms

Policy information about studies involving animals; ARRIVE guidelines recommended for reporting animal research

Laboratory animals	Mice, male and female
Wild animals	None used

Field-collected samples	none used
Ethics oversight	N/A

Note that full information on the approval of the study protocol must also be provided in the manuscript.