**README file**

Data Set Title: “**Phenotypic parameters, gene expression and calprotectin level in high salt‑fed stroke‑prone spontaneously hypertensive rats**"

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**Data set Contents**

The data set consists of a .zip archive, named **SHRSP\_JapaneseDiet\_Data\_23082024.zip**, containing:

* 4 files containing numerical data in .csv format

**SHRSP\_JapaneseDiet\_PhenotypicParameters\_23082024.csv**

**SHRSP\_JapaneseDiet\_Fibrosis\_23082024.csv**

**SHRSP\_JapaneseDiet\_GeneExpression\_23082024.csv**

**SHRSP\_JapaneseDiet\_SerumCalprotectin\_23082024.csv**

* 1 README file in .docx format

**SHRSP\_JapaneseDiet\_Data\_23082024\_README.docx**

**Data set Documentation**

Abstract

This dataset contains data for a study in which a high-salt/low-potassium stroke permissive diet (Japanese Diet; JD) was fed to Spontaneously Hypertensive Stroke Prone Rats (SHRSPs) and to Spontaneously Hypertensive Stroke Resistant Rats (SHRSRs). A Regular Diet (RD) was used as control diet. Specifically, for SHRSP and SHRSR rats fed with JD or RD are reported: (1) phenotypic parameters data (body weight, proteinuria and blood pressure), (2) perivascular and glomerular fibrosis (% area) data, (3) ZO-1, Ocln, Actb, GAPDH and Pgk1 gene expression data in the small intestine, (4) data about serum calprotectin levels.

We examined the inflammatory status of the animals by measuring serum calprotectin levels, and the gut barrier integrity by assessing gene expression of the tight-junction proteins zonulin (ZO-1) and occludin (Ocln) after 4 weeks of diet (short-term; ST) or until stroke occurrence for a maximum of 10 weeks (long-term; LT). Phenotypic parameters as body weight (BW), proteinuria, blood pressure (BP) and perivascular-glomerular fibrosis (% area) were measured. The BW of the two different strains fed RD increase with a similar trend, while the BW growth of SHRSP fed JD is significantly lower than SHRSR from the 5th week of diet. After 4 weeks, proteinuria level was significantly increased in SHRSPs JD-ST compared to RD-fed SHRSPs, and continued to increase throughout JD administration. Systolic blood pressure (BP) was not different among the four groups after 4 week of diet but increased significantly over time in both SHRSRs JD-LT and SHRSPs JD-LT (see file *SHRSP\_JapaneseDiet\_PhenotypicParameters\_23082024.csv*). Perivascular and glomerular fibrosis significantly increased in SHRSPs, but not SHRSRs, fed JD for 4 weeks compared with the corresponding controls fed RD (see file *SHRSP\_JapaneseDiet\_Fibrosis\_23082024.csv*).

Although SHRSPs carry a vasculitis-like cerebrovascular damage, no strain/diet-related significant differences in serum calprotectin levels were detected among experimental groups (see file *SHRSP\_JapaneseDiet\_SerumCalprotectin\_23082024.csv*). For the gene expression of the tight-junction proteins all samples were analyzed in duplicate. RT-qPCR assays were carried out for the target genes ZO-1 and Ocln and three different reference genes, Actb (Actin beta), GAPDH (Glyceraldehyde-3-phosphate dehydrogenase) and Pgk1 (Phosphoglycerate kinase 1). The duplicates were averaged, then ZO-1 and Ocln mRNA data were normalized based on the geometric mean of the Ct of the three reference genes (ΔCt = Ctmean ref. genes – Ctinterest gene). For each strain, the relative gene expression of the studied genes in JD-fed animals was calculated as fold change using the 2−ΔΔCt method in relation to the RD T0 time point (ΔΔCt = ΔCtT0 JD or T1 JD–ΔCtT0 RD). Undetectable RT-qPCR Cts were assigned a value of 40 to avoid overestimation of means.

In our study, ZO-1 expression did not change between the two rat strains on the two diets. In contrast, Ocln expression was significantly lower in SHRSPs compared to SHRSRs upon RD and increased in a time-dependent manner only in JD-fed SHRSPs, suggesting a strain-dependent interaction with the diet (see file *SHRSP\_JapaneseDiet\_GeneExpression\_23082024.csv*).

Content of the files

* file **SHRSP\_JapaneseDiet\_PhenotypicParameters\_23082024.csv** contains data about body weight, proteinuria and blood pressure of the SHRSP and SHRSR rats fed JD or RD;
* file **SHRSP\_JapaneseDiet\_Fibrosis\_23082024**. contains data about perivascular and glomerular fibrosis (% area) of a random selection of SHRSP and SHRSR rats fed JD or RD for 4 weeks;
* file **SHRSP\_JapaneseDiet\_GeneExpression\_23082024.csv** contains data about ZO-1, Ocln, Actb, GAPDH and Pgk1 gene expression in the small intestine of SHRSP and SHRSR rats fed JD or RD;
* file **SHRSP\_JapaneseDiet\_SerumCalprotectin\_23082024.csv** contains data about serum calprotectin levels of SHRSP and SHRSR rats fed JD or RD.

File specifics

The .csv files have the following specifics:

* character set UTF-8
* field delimiter “;” (semicolon)

Notes

Data Published in the article: Bencivenni S, Roggiani S, Zannoni A, Conti G, Fabbrini M, Cotugno M, Stanzione R, Pietrangelo D, Litterio M, Forte M, Busceti CL, Fornai F, Volpe M, Turroni S, Brigidi P, Forni M, Rubattu S, D'Amico F. Early and late gut microbiota signatures of stroke in high salt-fed stroke-prone spontaneously hypertensive rats. Sci Rep. 2024 Aug 23;14(1):19575. doi: 10.1038/s41598-024-69961-9.

Data sources

Gene expression data (**SHRSP\_JapaneseDiet\_GeneExpression\_23082024.csv**) are exported from Bio\_Rad CFX Manager software; Calprotectin data (**SHRSP\_JapaneseDiet\_SerumCalprotectin\_23082024.csv**) are exported from Skanit Software 2.3 for Appliskan (Thermo Electron Corporetion).

List of variables

Actb = Actin beta

BP = Blood Pressure

BW = body weight

Ct= cycle threshold

JD = Japanese diet

LT = long-term

GAPDH = Glyceraldehyde 3-phosphate dehydrogenase

Ocln = Occludin

Pgk1 = Phosphoglycerate kinase 1

Prot = Proteinuria

RD = Regular diet

SHRSP = Spontaneously Hypertensive Stroke Prone Rat

SHRSR = Spontaneously Hypertensive Stroke Resistant Rat

ST = short-term

ZO-1 = Zonulin 1

ΔCt = (Ct mean reference genes – Ct interest gene)