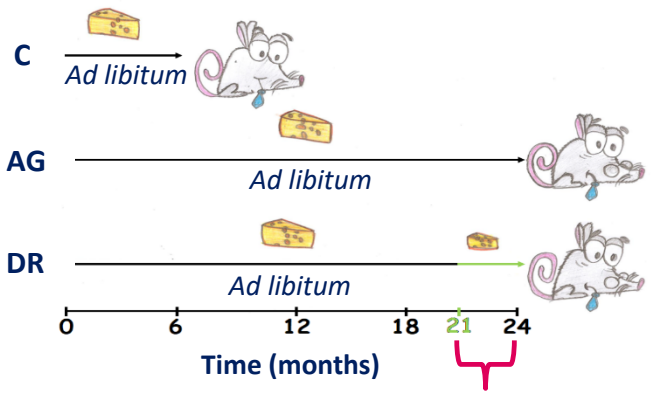
# GLUCOCORTICOID SIGNALING ALTERATIONS INDUCED BY LATE ONSET DIETARY RESTRICTION AGRRAVATE METABOLIC INFLAMMATION IN THE LIVER OF OLD WISTAR RATS

Ana Teofilović[1], Miloš Vratarić[1], Nataša Veličković[1], Danijela Vojnović Milutinović[1], Milica Prvulovic[2], Smilja Todorovic[2], Aleksandra Mladenovic Djordjevic[2] and Ana Djordjevic[1]

[1] Department of Biochemistry, [2] Department for Neurobiology, Institute for Biological Research "Siniša Stanković" - National Institute of Republic of Serbia, University of Belgrade

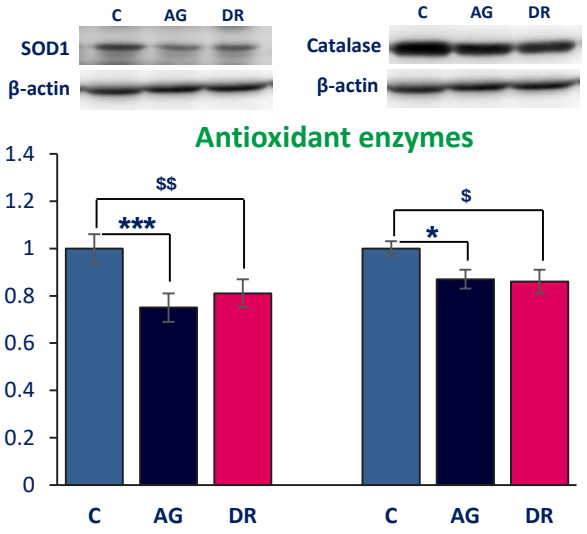
**Background:** Dietary restriction (DR) is often used approach to delay age-related disorders, however, it is unresolved how late beginning and short duration of DR modulates disturbed metabolic balance induced by ageing. Glucocorticoid hormones have significant role in the regulation of energy metabolism and inflammation. The aim of the study was to examine the impact of glucocorticoid signaling alterations induced by the late-onset DR on metabolic inflammation in the liver of old Wistar rats.

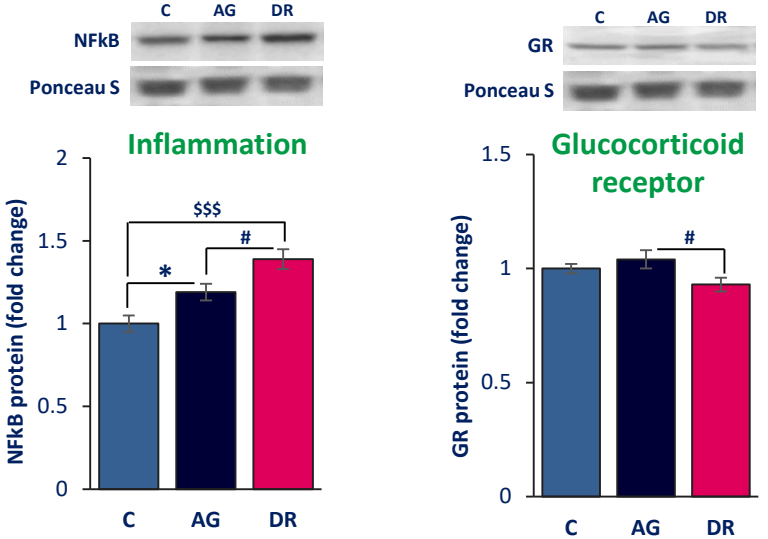
## Experimental design:




**DR (60% of *ad libitum* daily intake)**

## Results:




| | C | AG | DR |
|---|---|---|---|
| **Inflammatory markers** | | | |
| TLR4 mRNA | 1.00 ± 0.06 | 0.94 ± 0.06 | **1.33 ± 0.13$^{\$\$\#\#}$** ↑ |
| TNFα mRNA | 1.00 ± 0.13 | 1.25 ± 0.17 | **2.05 ± 0.42$^{\$}$** ↑ |
| **Glucocorticoid metabolism** | | | |
| 11β-HSD1 protein | 1.00 ± 0.03 | 1.07 ± 0.06 | 1.10 ± 0.06 |
| H6PDH protein | 1.00 ± 0.07 | 1.05 ± 0.05 | 1.04 ± 0.14 |
| 5α-reductase mRNA | 1.00 ± 0.13 | **2.77 ± 0.61$^{*}$** ↑ | **2.62 ± 0.35$^{\$}$** ↑ |
| Liver corticosterone (ng/mg) | 0.33 ± 0.02 | **0.57 ± 0.09 $^{*}$** ↑ | **0.35 ± 0.03 $^{\#}$** ↓ |

**Conclusion:** Late-onset DR did not improve expression of antioxidant enzymes and led to progression of age-related inflammation in the liver. This was accompanied with decreased levels of corticosterone and GR in the nucleus, implying that late-onset DR aggravates inflammatory response through decreased glucocorticoid signaling in the liver of old rats.

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