# P.819 Chlorogenic acid and gallic acid elevate pain sensitivity threshold in olfactory bulbectomized rats

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## Background and purpose

The olfactory bulbectomized (OBX) rat is widely used as an animal model of depression. Studies have reported decreased sensitivity to pain of depressed animals [1]. Chlorogenic acid (CGA) and gallic acid (GA) are abundant biologically active polyphenols in human diet with antinociceptive effects in painful conditions [2,3].

**The aim of this study was to investigate the effects of CGA and GA on pain sensitivity threshold to mechanical pressure on the uninflamed hind paw in OBX rats.**

## Methods

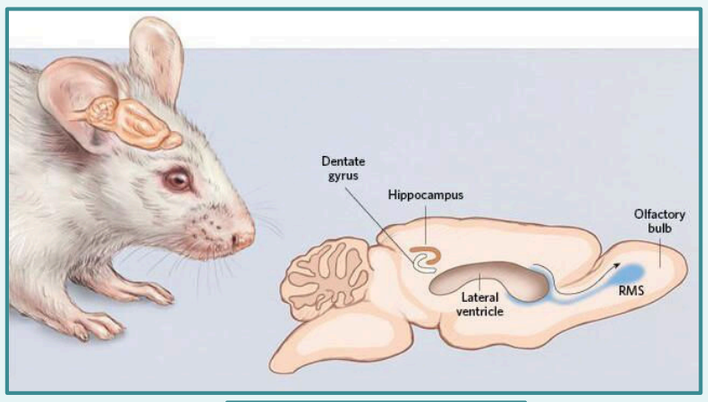
***Animals**: male Wistar rats (200-220 g)*

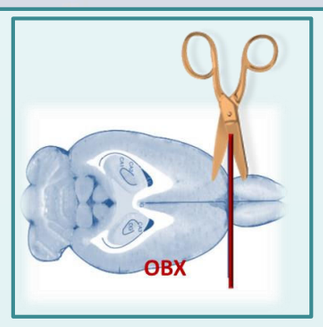
***Experimental substances:***

*CGA and GA purchased from Sigma Aldrich (Germany)*

***Experimental design:***

- 4 groups (n=6):
  - Sham operated (SO)
  - OBX
  - OBX+CGA
  - OBX+GA
- Bilateral OB according to the method of Kelly et al. [4]
- 15-days recovery period




- ***Treatment: 14 days***

| SO | OBX | OBX+CGA | OBX+GA |
|---|---|---|---|
| Distilled water 10 ml/kg | Distilled water 10 ml/kg | Chlorogenic acid 20 mg/kg | Gallic acid 20 mg/kg |

***Test:***

***The paw pressure Randall-Selitto test***

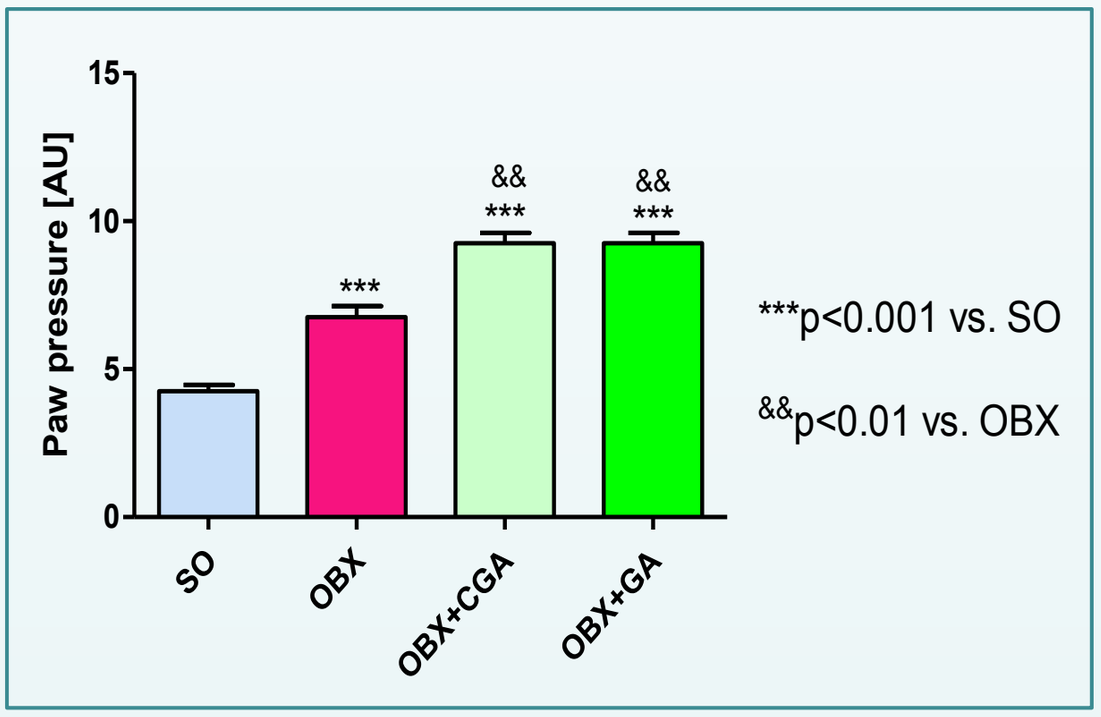
- Anagesimeter (Ugo Basile)
- Pain sensitivity – measured by the pressure at which the rat pulled back its hind paw

***Statistical analysis:***

One-way ANOVA, followed by Dunnett's multiple comparison post test; GraphPad Prism statistical software



## Results




## Conclusion

CGA and GA exerted antinociceptive effects and significantly elevated the reaction threshold to pressure of an uninflamed paw in OBX rats. There are some mechanisms that could be proposed as an explanation of these results. CGA has been shown to enhance the activities in voltage-gated potassium channels and thus to decrease the excitability of neurons [2]. GA exerted antinociceptive effects in painful condition in mice acting as an antagonist of the transient receptor potential ankyrin 1 (TRPA1), thus reducing the TRPA1-mediated calcium influx [3]. TRPA1 receptor antagonism as an explanation of the observed effects is further supported by the fact that TRPA1 knockout mice have a loss of noxious mechanosensation in the paw [5].

## References

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**There is no potential conflict of interests.**