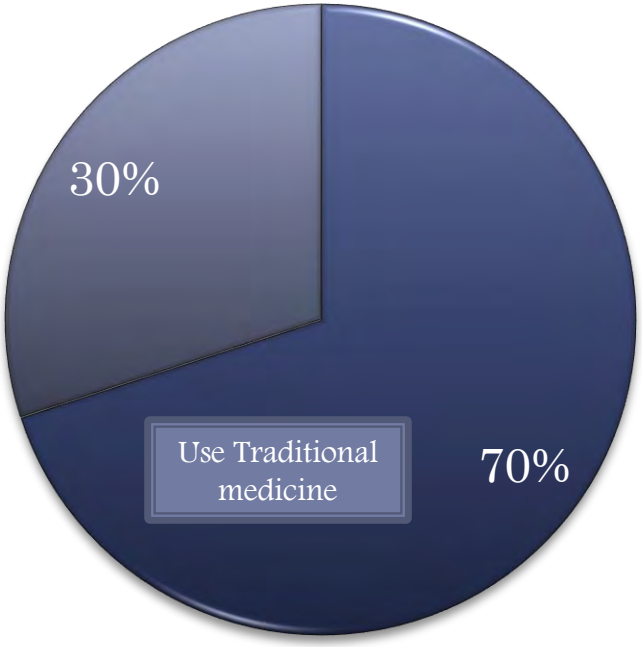
Metformin like analgesic and antidepressant activities of a turmeric extract enriched in curcuminoids

Suruchi Verma

Ph.D. Research Scholar

Neuropharmacology Research Laboratory
Department of Pharmaceutics
Indian Institute of Technology (Banaras Hindu University)
Varanasi, India
Email: suruchi.verma.rs.phe13@iitbhu.ac.in

INTRODUCTION



POPULATION

TURMERIC

Objectives

- To compare the single and repeated daily oral doses of a turmeric extract containing 95.4% curcuminoids (CLE) with metformin in hot plate test.

- To estimate the effect of CLE with metformin on stress responses in mice.

Materials and Methods

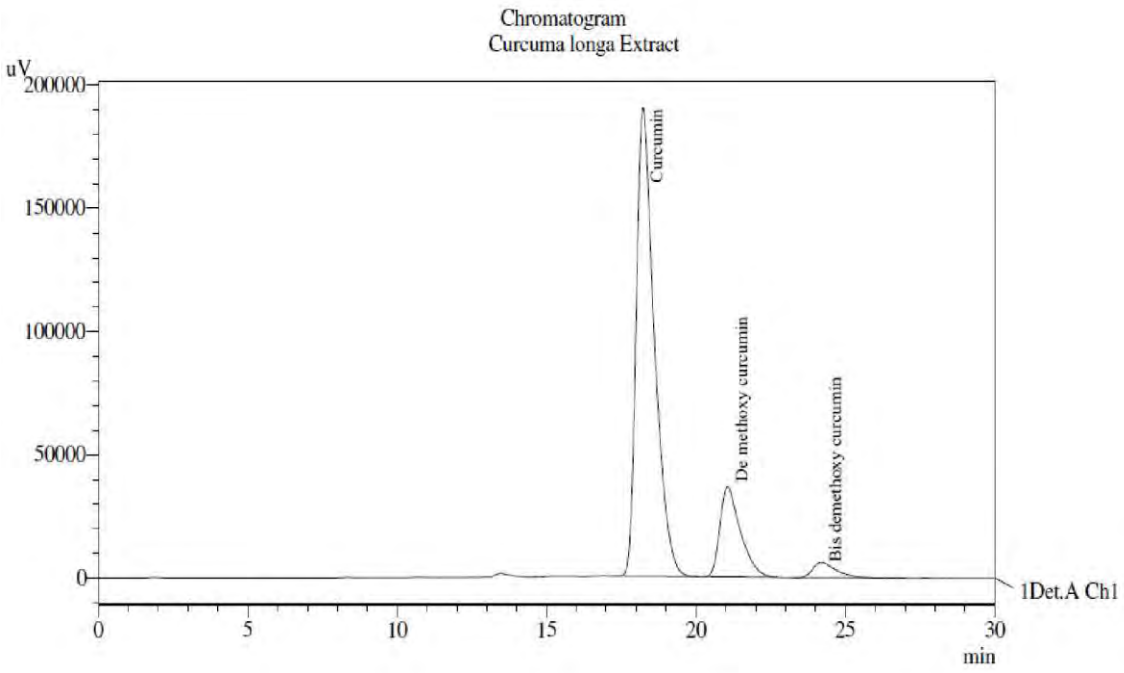


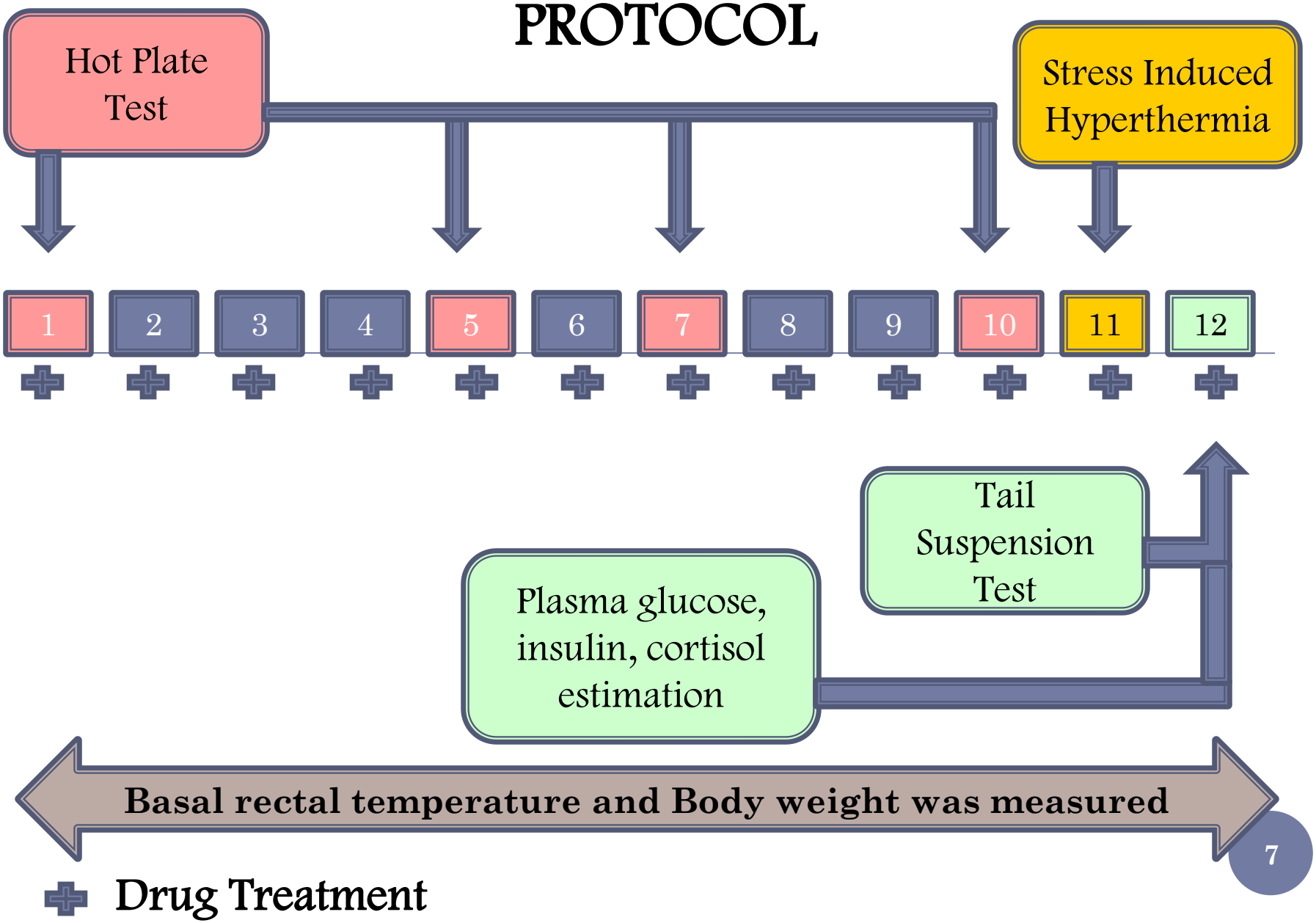
Figure 1: HPLC chromatogram of curcuminoids enriched *Curcuma longa* extract.

Methods

- In this exploratory experiment, the effect of test agents were quantified in three well standardized pharmacological models described in the following:

- **Hot plate test**
- **Stress induced hyperthermia test**
- **Tail suspension test**

PROTOCOL



Drug Treatment

Statistical Analysis

- The data are expressed as Mean±SEM and $p<0.05$ was considered statistically significant.

- One way ANOVA followed by Student-Newman-Keuls multiple comparison test

- Two way ANOVA followed by Bonferroni post hoc test.

- GraphPad Prism-5 was used for statistical analysis.

- Origin-Pro 8 software was used for graphical representation.

RESULTS

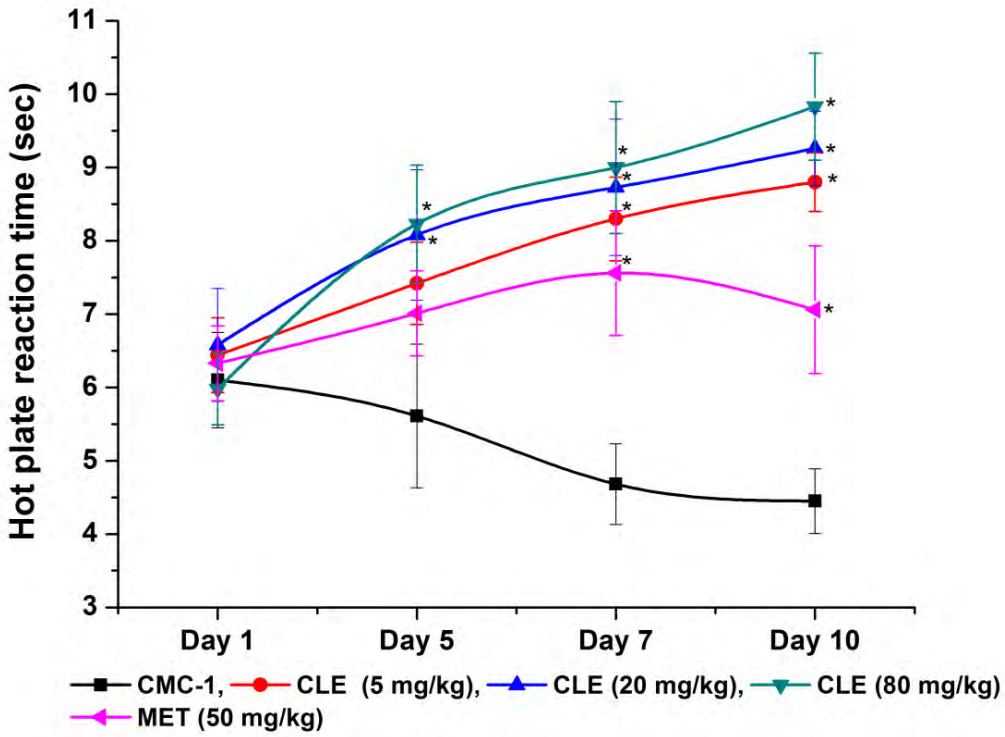


Figure 2: Hot plate reaction time of male mice treated with curcuminoids enriched turmeric extract (CLE) and metformin (MET).

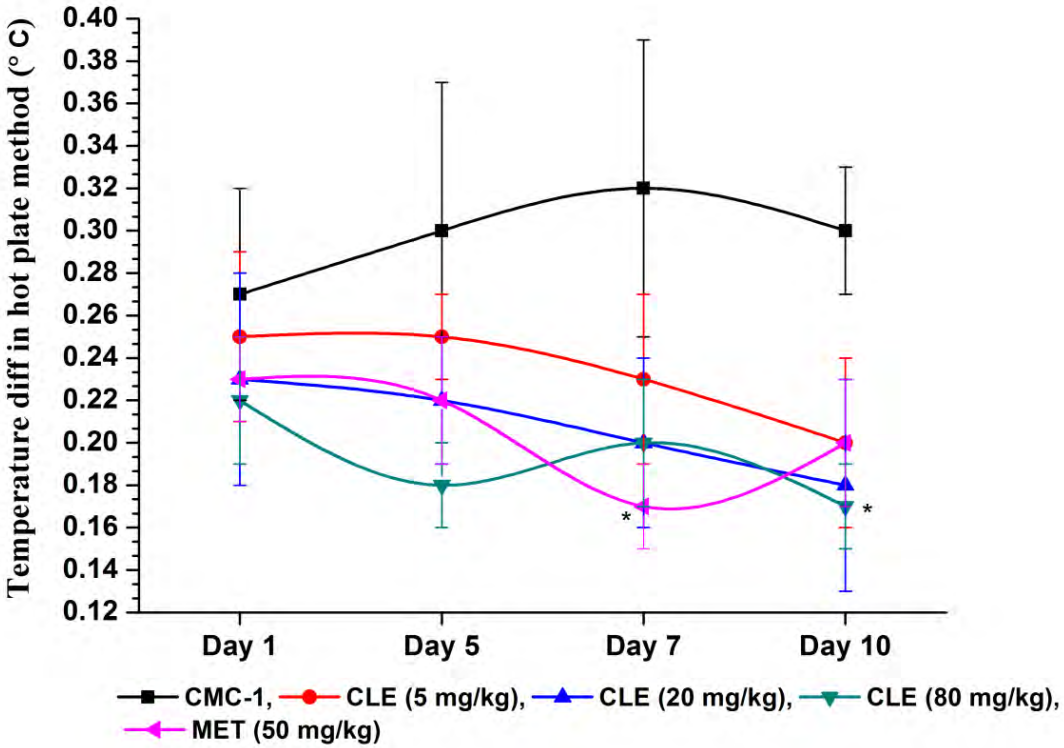


Figure 3: Thermal stimuli induced hyperthermia in male mice treated with curcuminoids enriched turmeric extract (CLE) and metformin (MET).

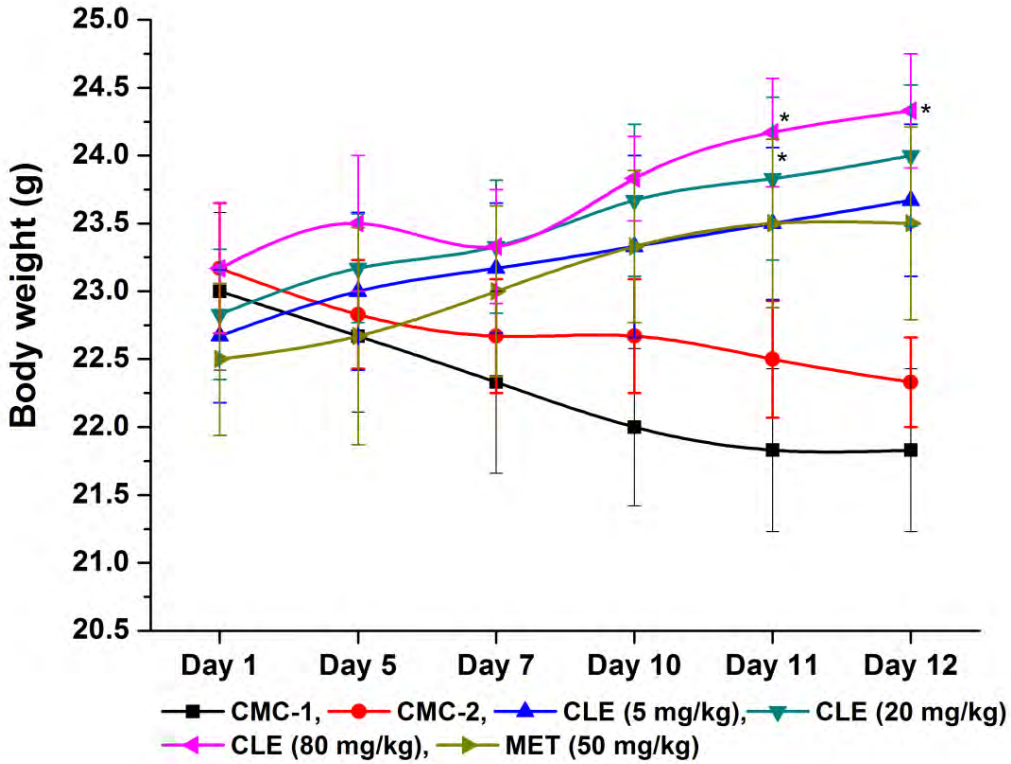


Figure 4: Effect of thermal stimuli induced stress on body weight of male mice treated with curcuminoids enriched turmeric extract (CLE) and metformin (MET).

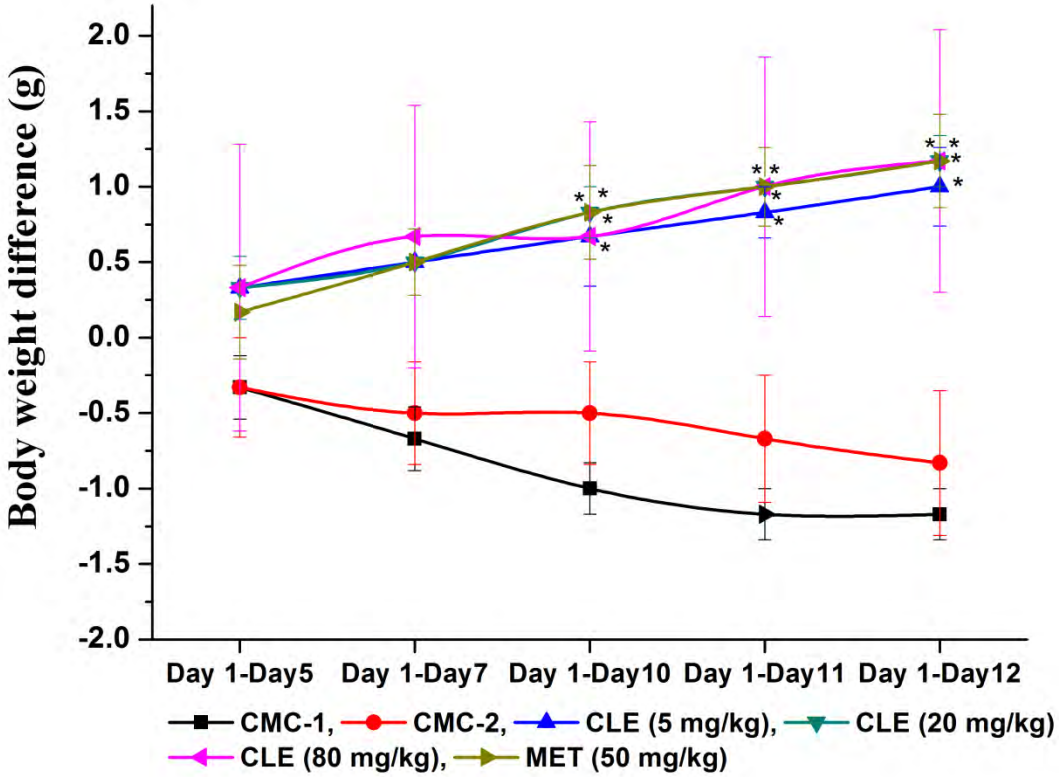


Figure 5: Body weight difference of male mice treated with curcuminoids enriched turmeric extract (CLE) and metformin (MET).

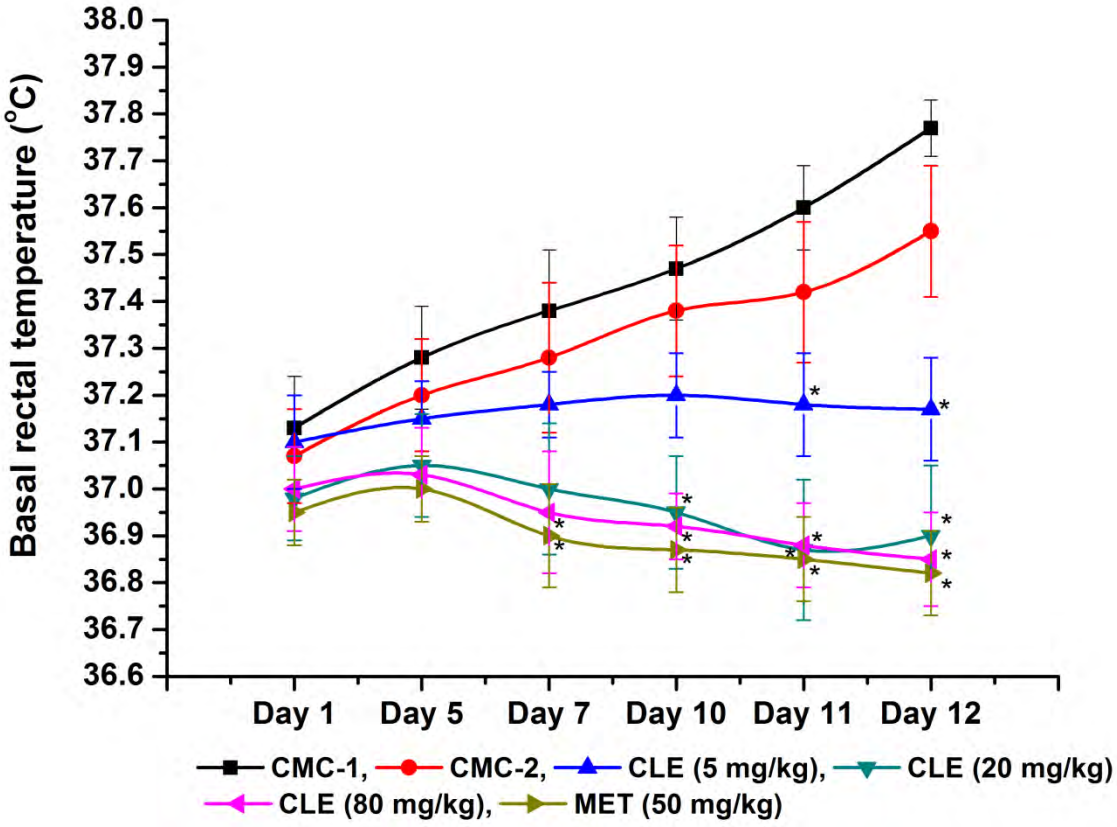


Figure 6: Effect of thermal stimuli induced stress on basal rectal temperature in male mice treated with curcuminoids enriched turmeric extract (CLE) and metformin (MET).

Table 1: Effect of curcuminoids enriched turmeric extract (CLE) and metformin (MET) on stress induced hyperthermia in male mice on day 11.

Treatment groups	Rectal Temperature (°C)		
	Before	After	Difference
CMC-1	37.60±0.09	38.32±0.07[a]	0.72±0.04
CMC-2	37.42±0.15	38.08±0.16[a]	0.67±0.03
CLE (5 mg/kg)	37.18±0.11	37.82±0.11[a]	0.63±0.06
CLE (20 mg/kg)	36.87±0.15	37.43±0.13[a]	0.57±0.03
CLE (80 mg/kg)	36.88±0.09	37.42±0.08[a]	0.53±0.05
MET (50 mg/kg)	36.85±0.09	37.45±0.12[a]	0.60±0.06

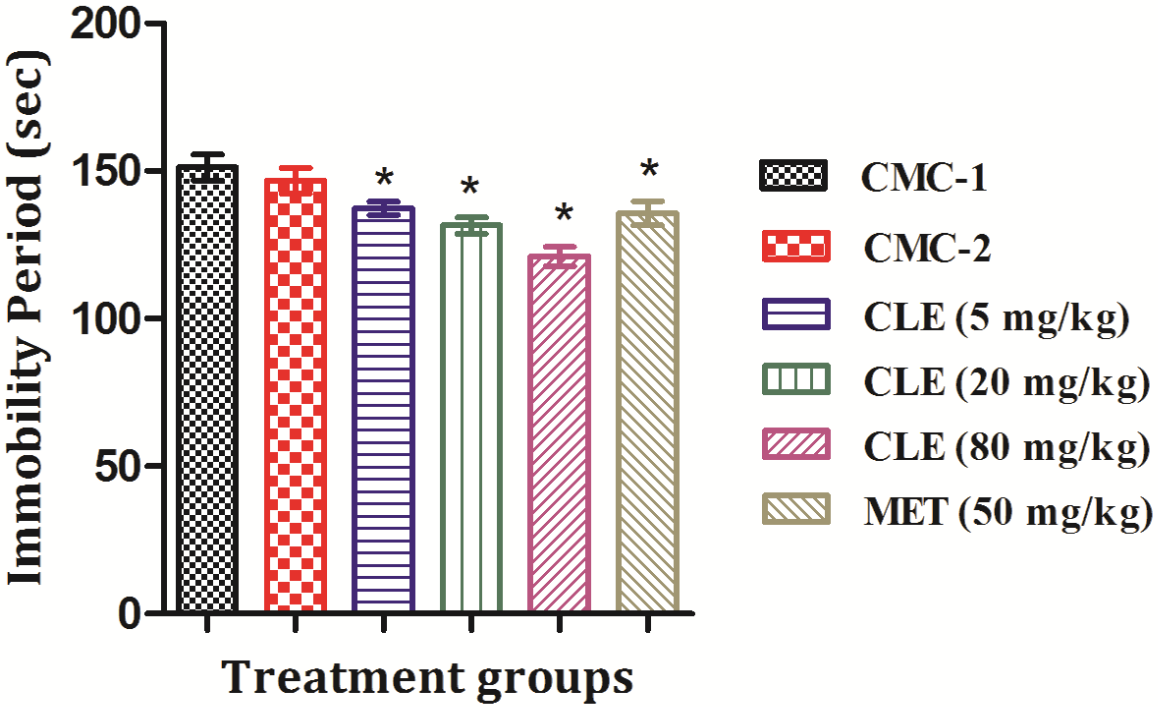


Figure 7: Effect of curcuminoids enriched turmeric extract (CLE) and metformin (MET) in tail suspension test on day 12.

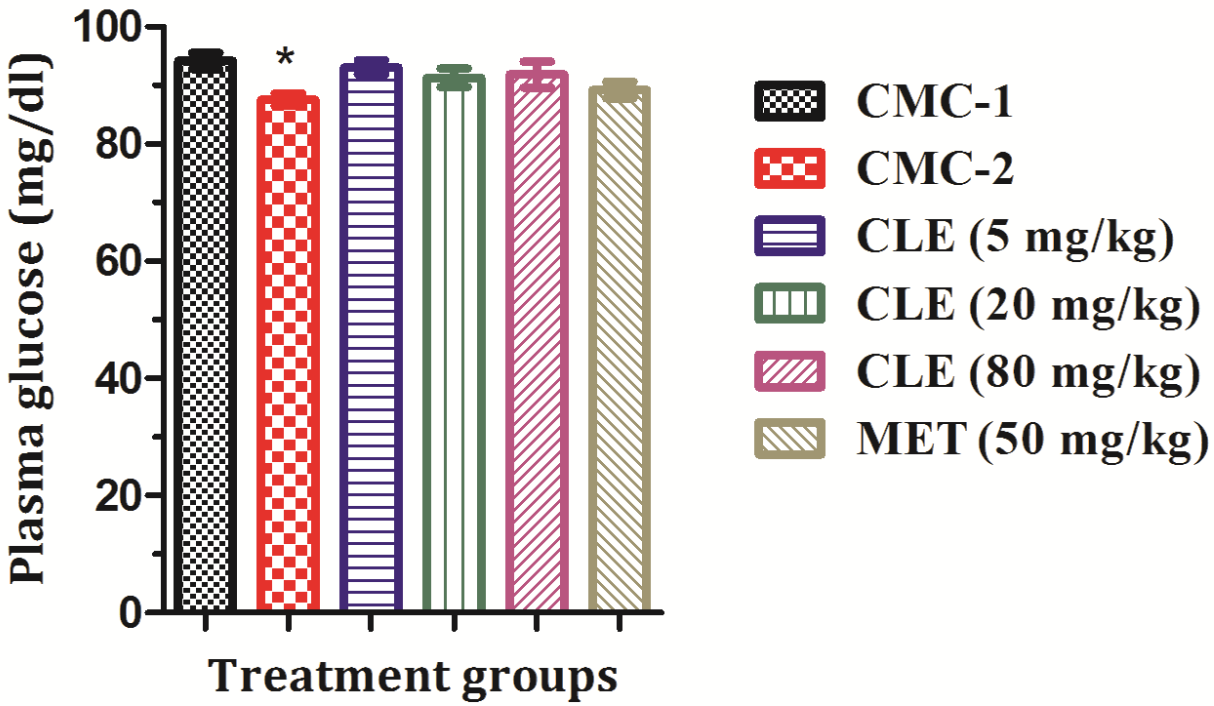


Figure 8: Effect of curcuminoids enriched turmeric extract (CLE) and metformin (MET) on plasma glucose level in male mice.

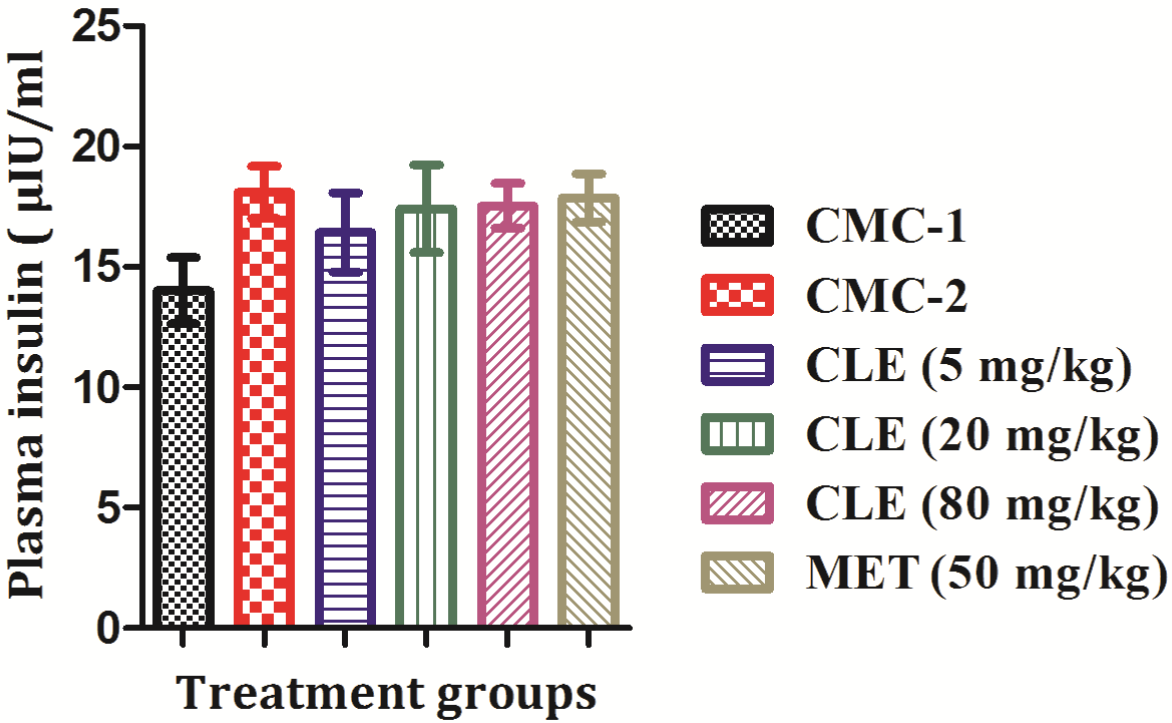


Figure 9: Effect of curcuminoids enriched turmeric extract (CLE) and metformin (MET) on plasma insulin level in male mice.

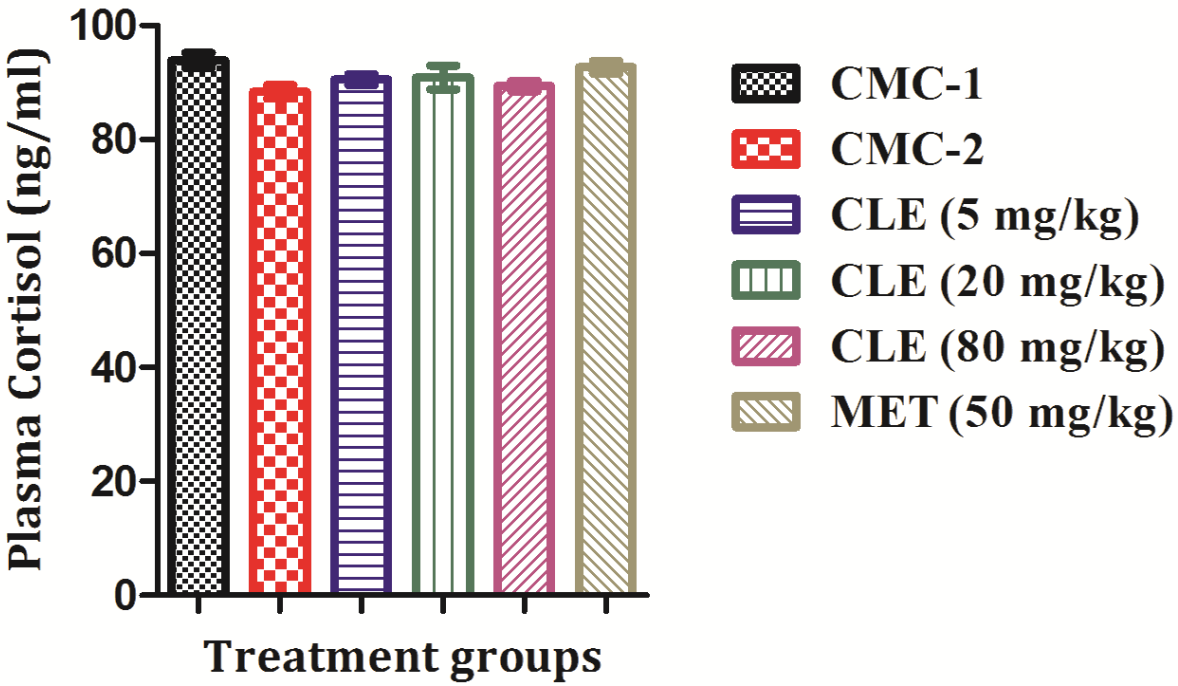
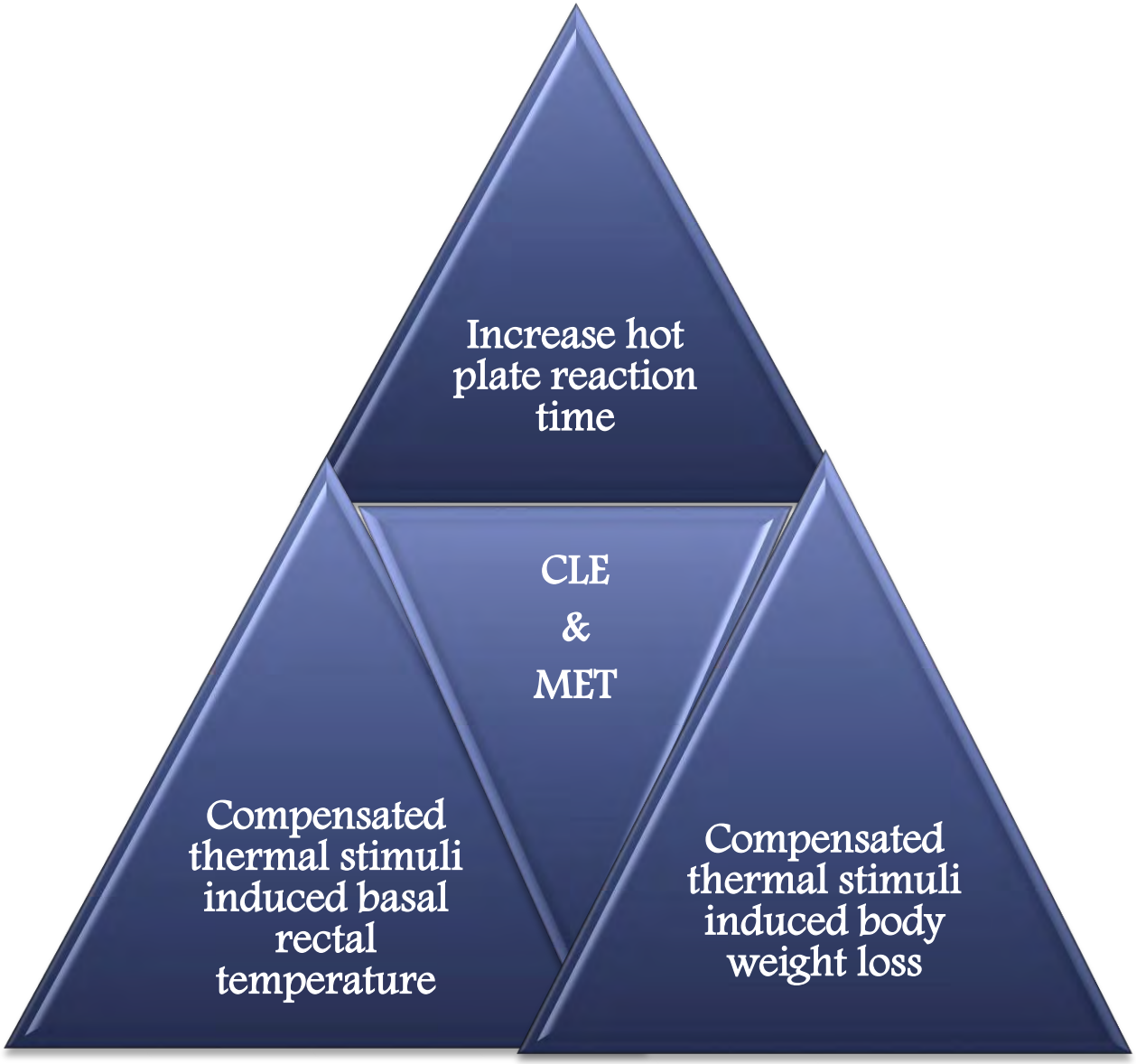
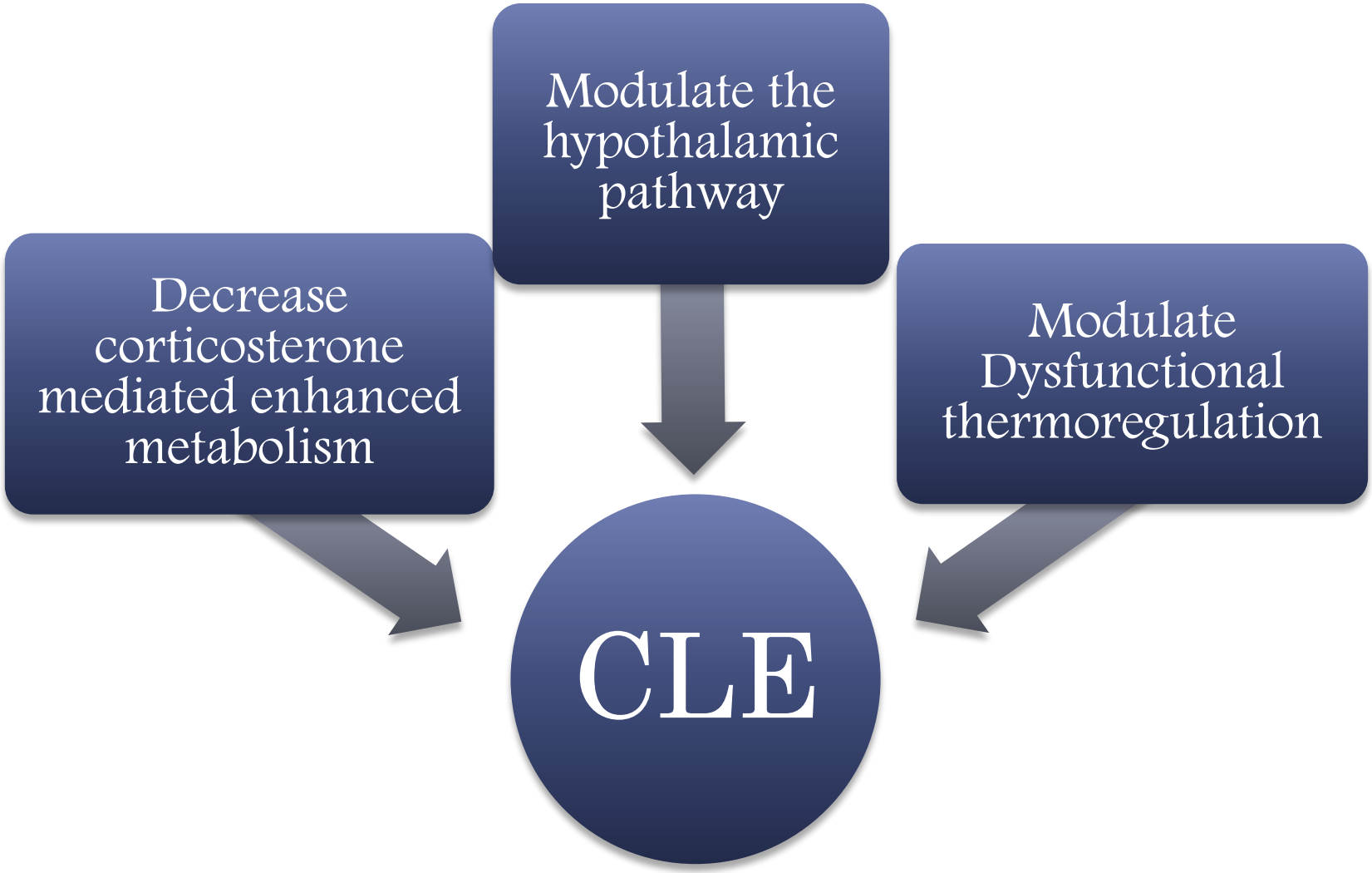


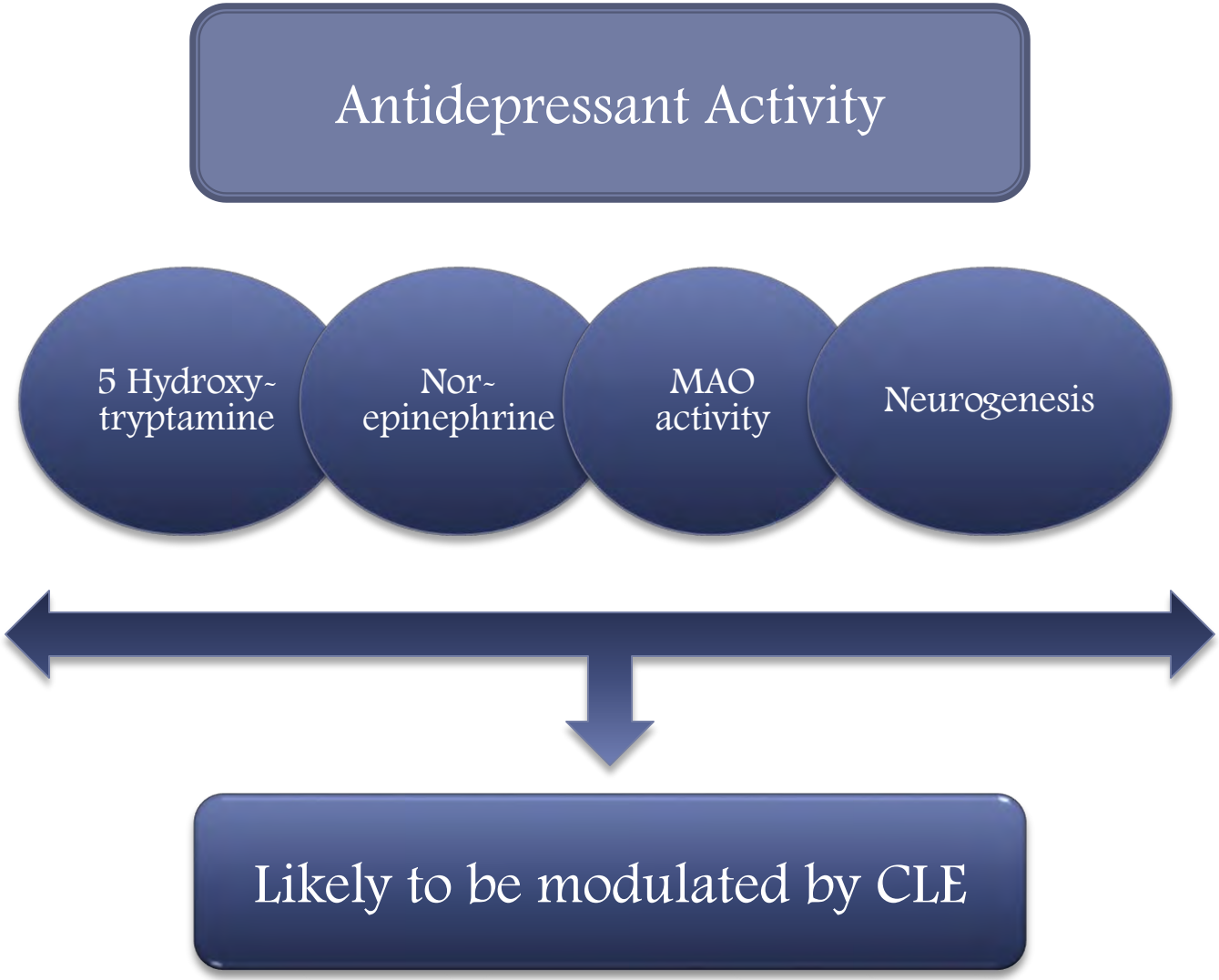
Figure 10 : Effect of curcuminoids enriched turmeric extract (CLE) and metformin (MET) on plasma cortisol level in male mice.

DISCUSSION


Increase hot plate reaction time
CLE
&
MET
Compensated thermal stimuli induced basal rectal temperature
Compensated thermal stimuli induced body weight loss



- Bhatia et al., 2011



- Xia et al., 2007; Shrinivas et al., 2008

CONCLUSION

- Bio-assay system used in this study is well suited for identifying analgesics and antidepressants like effects of CLE and metformin like stress response modifiers.

- CLE could be potent therapeutic option for treatment of co-morbid psychopathologies associated with environmental stress.

References

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•Xia, X., Cheng, G., Pan, Y., Xia, ZH., Kong, LD., 2007. Behavioral, neurochemical and neuroendocrine effects of the ethanolic extract from *Curcuma longa* in the mouse forced swimming test. J. Ethnopharmacol. 110: 356-363.

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Thank You

Any Queries?