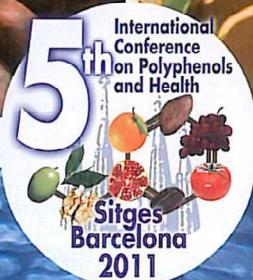


# 5<sup>th</sup> International Conference on Polyphenols and Health



Sitges, Barcelona, 17-20 October 2011

FINAL PROGRAMME

[www.icph2011barcelona.com](http://www.icph2011barcelona.com)

## BACKGROUND AND AIMS

*Thymus citriodorus*, or lemon thyme, is used as a medicinal plant in the treatment of asthma and other respiratory diseases, although the mechanism of its beneficial properties is poorly understood.

The aim of the present study was to determine the antioxidant ability of a rich-phenolic extract of this plant.

## METHODS

The ethanolic extract was prepared by extraction with aqueous ethanol solution (80%) and its antioxidant activity was determined by *in vitro* measurement of its 2,2-diphenyl-1-picrylhydrazyl radical (DPPH) scavenging potential [1] and reducing power [2]. The non-toxic range of extract concentrations was determined by MTT test, after exposure of hepatoblastoma HepG2 cells to the extract (1–200 µg/mL) for 72 h [3]. The protective effects against the generation of reactive oxygen species (ROS) in HepG2 cells was measured by flow cytometry using dichlorofluorescein diacetate [4]. For that, 50 µg/mL the extract was incubated for 48 h in presence and absence of potassium dichromate (5 and 25 µM).

## RESULTS AND DISCUSSION

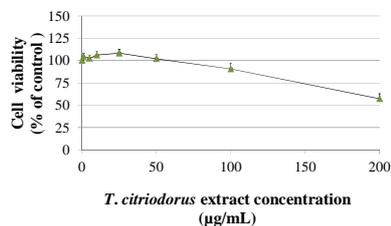
**Table 1-** Radical scavenging potential and reducing power of *T. citriodorus*

DPPH (EC <sub>50</sub> ) <sup>a</sup> mg/mL	Reducing Power (EC <sub>50</sub> ) <sup>b</sup> mg/mL
0.32±0.05	0.77±0.15

Values are means ± S.D. of three replicate analyses;

<sup>a</sup> EC<sub>50</sub> – Concentration for a 50% inhibition;

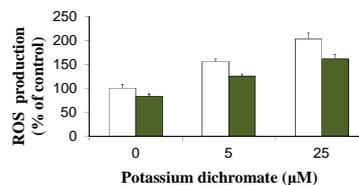
<sup>b</sup> EC<sub>50</sub> – Effective concentration at which the absorbance is 0.5.



**Fig. 1-** Cell viability at 72 h in HepG2 cells

As revealed by the MTT test, maximal non-toxic concentration of the extract is 50 µg/mL.

The components of the extract have a relevant radical scavenging ability towards nitrogen free radicals and high reducing capacity.



**Fig. 2-** Protection of ROS production induced by potassium dichromate in HepG2 cells

HepG2 cells treated with 50 µg/mL of *T. citriodorus* ethanolic extract decreased the rate of ROS production, both under basal conditions or under oxidative stress conditions (induction by potassium dichromate).

## CONCLUSION

Our results suggest that, since luteolin-7-O-glucoside, apigenin-7-O-glucuronide and rosmarinic acid are major components of *Thymus citriodorus* ethanolic extract [6], these phenolic constituents may be involved in its antioxidant properties. Accordingly, further investigations to elucidate the actual contribution of each compound to the overall protective effect are needed.

## REFERENCES

- [1] Ferreira, A. et al. (2006). *J. Ethnopharmacol.* 108, 31-7
- [2] Pereira, J. et al. (2006). *J. Agric. Food Chem.* 54, 8425-8431
- [3] Liu Y. & Nair M. G., (2010) *J. Nat. Prod.* 73, 1193–1195
- [4] Rosenkranz, A.R. et al. (1992) *J. Immunol. Meth.* 156, 39–45
- [6] Pereira, O. R. et al. *Food Chem.* Submitted for publication

## ACKNOWLEDGEMENT

Pereira O R thanks for the PROTEC grant SFRH/PROTEC/49600/2009

