

# *Clitoria ternatea* extract as a source of antioxidant compounds in chitosan based edible films and their intelligent properties

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## AIM

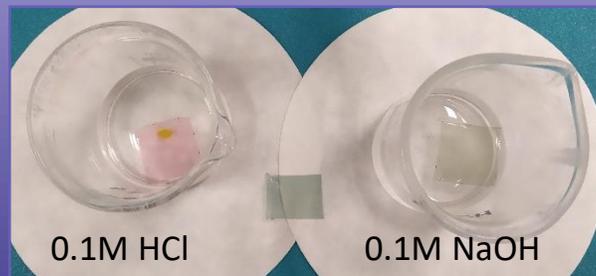
The aim of the study was to add a water based *Clitoria ternatea* (also called blue tea) extract to the chitosan films and measured antioxidant potential of experimentally produced edible packaging. Another part of the research is focused on the determination of intelligent properties due to the presence of anthocyanins responsible for changing colour in different pH.

## RESULTS

It was found out that films with *Clitoria ternatea* extract do not have a high antioxidant activity, the highest results for DPPH was around 3 %, which is very low, in comparison with the article by Jancikova et al. (2019):  $87.84 \pm 0.07$  % for carrageenan films with 20 % of dried rosemary extract. Total polyphenol content as an indicator of antioxidant activity is also not too high (max.  $14.85 \pm 0.65$  mg gallic acid/g of sample). The best intelligent properties were confirmed in the films with 40 % of extract. Film's colour in neutral pH was blue, in acidic pink and in basic green.



Sample	TPC (mg gallic acid/g)	DPPH (%)
CH <sub>L</sub>	$2.19 \pm 0.55^a$	$0.38 \pm 0.09^a$
5CH <sub>LMČ</sub>	$3.20 \pm 0.42^a$	$0.59 \pm 0.05^a$
10CH <sub>LMČ</sub>	$3.86 \pm 0.22^a$	$0.42 \pm 0.16^a$
20CH <sub>LMČ</sub>	$7.65 \pm 0.17^b$	$3.12 \pm 0.12^b$
30CH <sub>LMČ</sub>	$10.04 \pm 0.06^c$	$3.90 \pm 0.15^c$
40CH <sub>LMČ</sub>	$14.85 \pm 0.65^d$	$3.96 \pm 0.07^c$



## MATERIAL AND METHODS

Edible films consisted of chitosan, glycerol and *Clitoria ternatea* extract in the following concentrations 5, 10, 20, 30 and 40 % were prepared. DPPH assay was used as a determination of antioxidant properties. DPPH solution in ethanol was mixed with 3 mL of ethanolic extract of films and incubated for 30 minutes in dark. The absorbance was measured at 517 nm and DPPH scavenging activity was expressed as a percentage. The polyphenol content was measured with Folin-Ciocalteu solution. The absorbance was measured at 765 nm and the polyphenol content was expressed as an amount of gallic acid (mg/g). The intelligent properties were analysed by dipping films in 1M HCl and 1M NaOH.

## CONCLUSION

Prepared films with addition of blue tea extract are not a good source of polyphenolic and antioxidant compounds. In the future researches the concentration of extract should be increased or the amount of *Clitoria ternatea* used for extract preparation should be higher. Concentration 40 % of blue tea extract is sufficient for the intelligent properties, so the film could potentially work as an indicator of foodstuff's shelf life.

## ACKNOWLEDGMENT

This research was supported by Internal grant agency in the University of Veterinary and Pharmaceutical Sciences Brno project number 229/2020/FVHE.