

# STABILITY AND COLOR EVOLUTION OF ANTHOCYANINS FROM CORNELIAN CHERRY EXTRACTS IN DIFFERENT FOOD SYSTEMS

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## INTRODUCTION:

Food colorants are of great interest both in industrial and scientific basis. Nowadays, environmental concerns as well as the consumers' growing interest for natural and clean-label products contribute to the replacement of synthetic colorants with natural ones. To this respect, natural ingredients are being employed as food colorants. *Cornelian cherry* is a medicinal plant of the Mediterranean basin and it is a source of bioactive compounds, such as phenolics and anthocyanins. Due to its properties, it can be used for the production of innovative products either by using the whole fruit or by isolating the anthocyanins.

## OBJECTIVES:

The aim of the present study was the evaluation of 'green' extracts from *Cornelian cherry* as food colorants. The extracts were evaluated as red colorants in real food systems.

## METHOD / DESIGN:

Aqueous solutions of b-cyclodextrin were used as extraction media as well as means of anthocyanins' stabilization. FTIR analysis was used for the identification of possible interactions of cyclodextrin and phenolic compounds. The interactions of anthocyanins in the presence of metal ions i.e. Fe<sup>3+</sup> and Ca<sup>2+</sup> have also been evaluated. Spectrum analysis was used for the investigation of co-pigmentation effect. Colorimetric values and total anthocyanin content were evaluated in respect to cyclodextrin and metals presence. Model foods, i.e. acidic non-carbonated beverage and meat balls, were used for the evaluation of *Cornelian cherry* extracts as red colorants for the food industry.

## RESULTS:

FTIR spectrum changes appear as a result of possible interactions of the *Cornelian cherry* compounds with cyclodextrin. The metal ions contribute also to spectrum changes as a result of the co-pigmentation effect. The final color of the extract in the presence of iron becomes darker and a blue color appears in pH=5. Cyclodextrin contributes to the stability enhancement of anthocyanins during storage under different conditions. The non-carbonated beverage containing the cyclodextrin extract had the lowest ΔE values during storage and highest content of total anthocyanins. On the other hand, in the meat product, the redness was slightly affected by the addition of the red extract.

## CONCLUSIONS:

In acid conditions, the produced extracts have a clear red color and the anthocyanins show a good stability. In this study, blue derivatives were created in almost neutral conditions as a result of the co-pigmentation effect of Fe<sup>2+</sup>. Cyclodextrin, despite the fading effect, contributed to the stability of anthocyanins in all examined conditions. For the first time, *Cornelian cherry* was used for the formulation of a red acidic non-carbonated beverage with attractive and stable color. Hence, the developed extraction conditions with cyclodextrin can induce the use of the extract in the food and beverage industry.