Influence of medicinal and aromatic plants on egg yolk sensory traits in laying hen

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Introduction

- **Yolk color depends directly on dietary supply** because layers cannot produce coloring pigments.
- Synthetic pigments are widely used in layers feed because of the higher pigmenting power, stability, storage, facility in the processing, and are sometimes addressed to be cheaper.
- Products with **natural pigments** could achieve **higher market value**, are becoming **preferred among consumers** and may also be **beneficial to human health**.
- Many medicinal and aromatic plants species are good source of pigments and other functional compounds which could affect yolk sensory traits.

Materials and methods

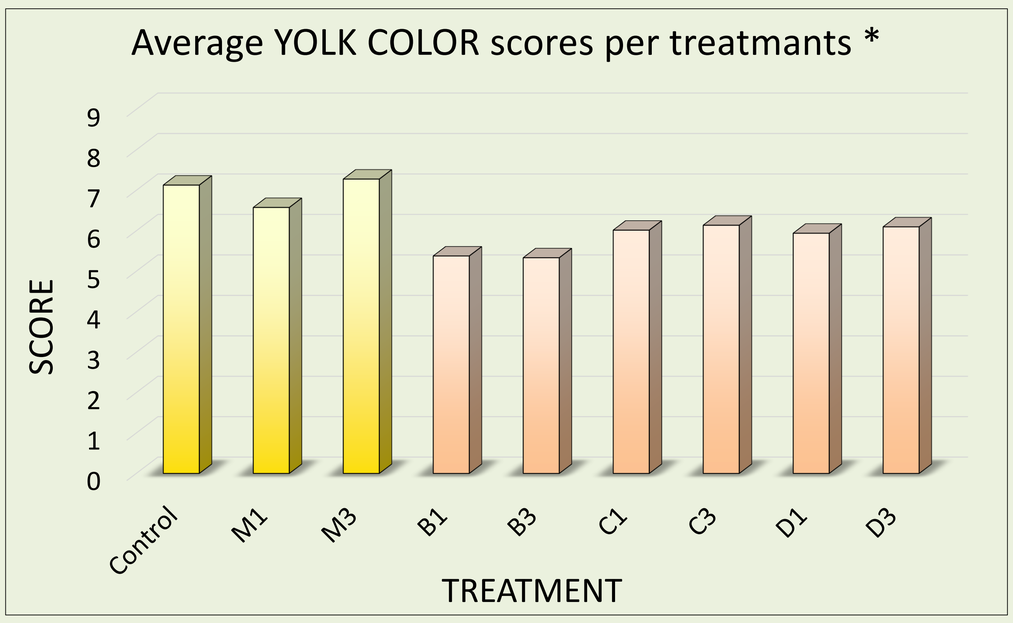
- **135 TETRA-SL laying hens** randomly assigned to 9 different dietary treatments
- Control group: standard commercial diet **with synthetic pigments**)
- Experimental groups: **two levels, 1 and 3%,** of plant flower (calendula: **C**, dandelion: **D**, marigold: **M**) or herb (basil: **B**)
- Sensory analysis: on hardboiled egg yolks by **hedonic test with 97 untrained consumers** (Table 1)
- Six sensory traits: **color, aroma, flavor, texture, off-odors and overall impression**
- Statistics: **Kruskal-Wallis rank sum test and Steel method** for treatment comparison

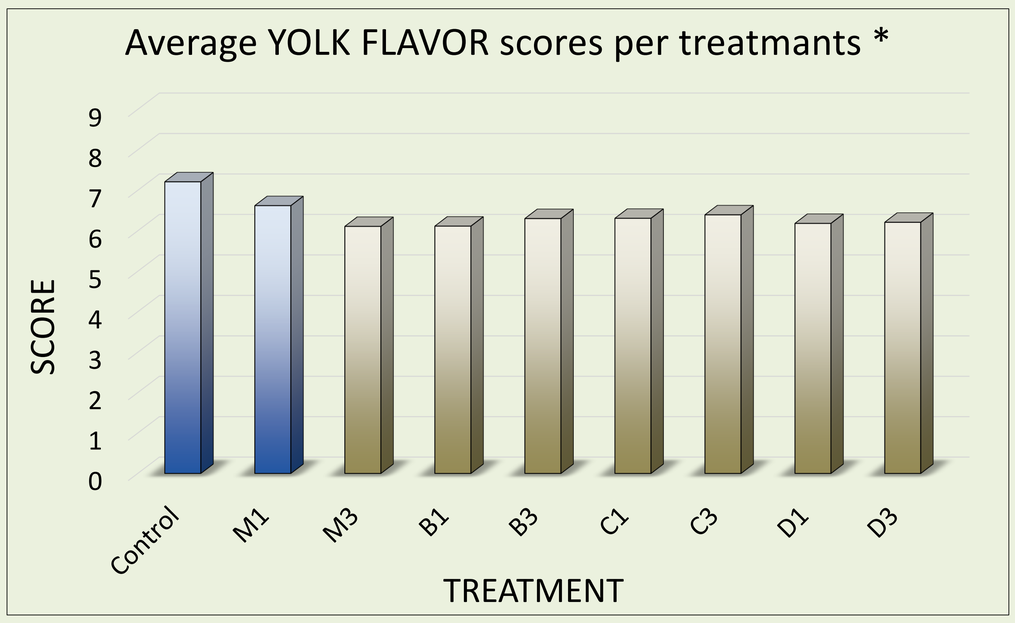
Table 1. Socio-demographic characteristics of the respondents

Characteristic	Percentage (%)	Characteristic	Percentage (%)
Gender		**Household income**	
Female	52.6	Low	6.2
Male	47.4	Middle	59.8
Age (years)		Upper Middle	30.9
<20	9.3	High	3.1
21-30	29.9	**Education level**	
31-40	26.8	Elementary school	2.1
41-50	20.6	High school	24.7
51-60	6.2	University degree	73.2
>61	7.2		

Results

- **Yolk aroma, texture, off-odors and overall impression were not significantly affected** by the addition of medicinal and aromatic plants in layers feed.





* Bars with different color compared to Control mean significantly different value ($P<0.05$)

Conclusions

- Addition of calendula and dandelion flower powder and basil herb powder in layers feed appeared to be inadequate for egg yolk sensory traits.
- **Marigold** is found to be a potential replacement for synthetic pigments with emphasis on further research.

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