The inclusion of microalga *Dunaliella salina* in the diet of laying hens: effects on production performance and egg quality

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Summary

Nutritional Profile

Introduction

Why microalgae?

Protein

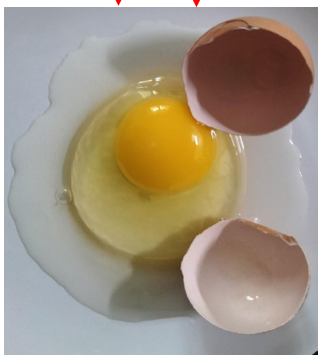
Species	% Crude protein
Chlorella pyrenoidosa	57.0
Chlorella vulgaris	42.0–58.0
Dunaliella salina	22.5
Isochrysis galbana	39.6
Nannochloropsis granulata	17.9–39.5
Nannochloropsis oculata	17.9–30.8
Spirulina platensis	46.0–63.0
Tetraselmis chuii	60.0

PUFAs

EPA e DHA

Carotenoids

β-carotene



Introduction

Why microalgae?

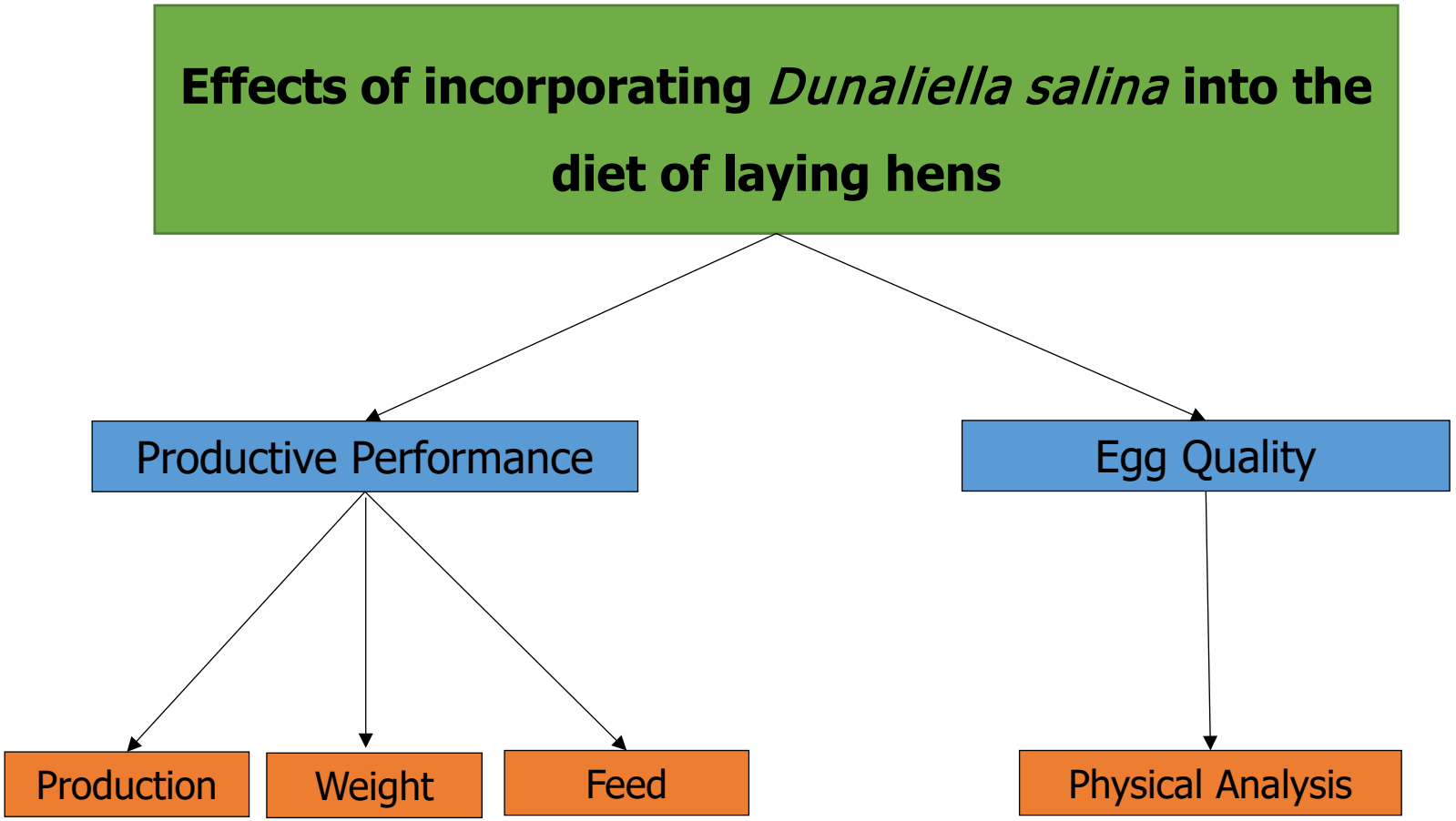







General and Specific

Work objectives



Experimental Design

Material and methods

Strain: *Brown Nick*

Age: 58 weeks

Treatments

Control

1% (DS-1)

2.5% (DS-2.5)

5% (DS-5)

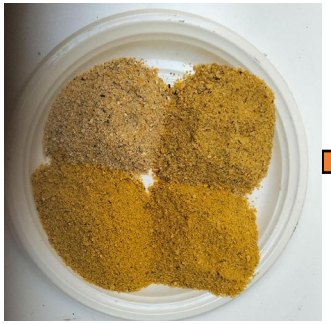
Duration: 7 weeks

Productive Performance

Material and methods

Production

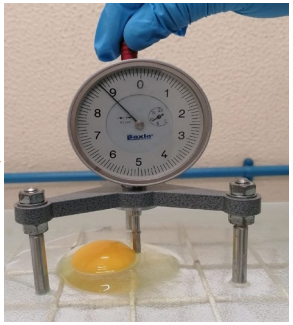
Feed

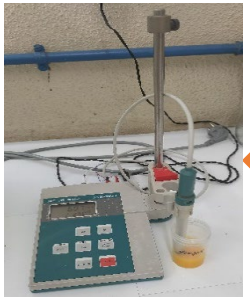


Egg Quality

Material and methods

Physical analyzes





Productive Performance

Results and Discussion

Parameters	Groups				p-value
	Control	DS-1	DS-2.5	DS-5	
Egg production (%)	93.7	97.0	94.4	94.6	0.237
Egg weight (g)	67.8[a]	66.9[a]	66.2[a]	63.8[b]	<.0001
Feed intake (g/d)	115.7[a]	123[b]	119[ab]	114[a]	0.004
Feed conversion ratio	1.610	1.709	1.680	1.683	0.398

Means within the same line with different superscripts are significantly different ($p < 0.05$).

Egg Quality

Results and Discussion

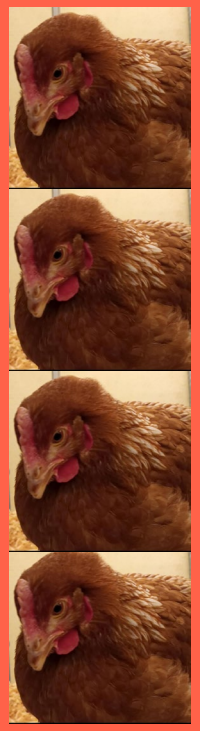
Parameters	Groups				p-value
	Control	DS-1	DS-2.5	DS-5	
Shape index (%)	77.8	80.8	80.4	76.4	0.066
Haugh Unit	75.3	76.1	70.4	71.3	0.222
Yolk Index (%)	45.2	45.5	47.2	43.3	0.406
Egg surface area (cm^2)	73.7	74.3	74.4	72.7	0.261
Shell index ($g/100cm^2$)	8.64	8.76	9.011	8.943	0.220
Shell thickness (mm)	0.368	0.372	0.383	0.380	0.220

Egg Quality

Results and Discussion

Parameters	Groups				p-value
	Control	DS-1	DS-2.5	DS-5	
Yolk color Score	3.50^{a}	4.41^{b}	5.25^{c}	6.06^{d}	<.0001
L^{*}	44.33	43.7	43.1	43.43	0.241
b*	35.9^{a}	38.2^{b}	39.3^{b}	42.7^{c}	<.0001
a*	1.35^{a}	2.42^{b}	3.54^{c}	5.13^{d}	<.0001

Means within the same line with different superscripts are significantly different ($p < 0.05$).



Final considerations

- These findings indicate that the incorporation of *Dunaliella salina* in the diets of laying hens may affect some performance parameters, but not egg quality.

- More studies are needed to analyze the impact of incorporating *Dunaliella salina* into the diet of laying hens.

Thank you very much!

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