

The Effect of Adding Essential Oils to Liquid Whole Egg Chemical and Physical Properties

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Introduction

Eggs can provide a good amount of protein as well as healthy fats. Egg proteins are considered to be high quality proteins containing all essential amino acids. Liquid egg products are microbiologically more stable than shelled eggs which help in increasing their shelf life. Rosemary, basil and garlic essential oils are well known for their great content of phytochemicals with antioxidant and anti-inflammatory properties.

The aim of this study is to identify possible nutritional benefits and preservation effects of adding rosemary, basil, and garlic extracts to liquid whole eggs to create a new product with higher nutritional value.

Materials and Methods

Raw homogenized liquid whole egg was obtained from a liquid egg plant (Capriovus Ltd., Szigetcsép, Hungary). All three essential oils were obtained from RASP GmbH, Austria.

Methods

1,2 and 3% V/V of rosemary oil, basil oil, garlic oil were added to raw liquid whole eggs then pH, color, viscosity to evaluate the effect.

Results and Discussion

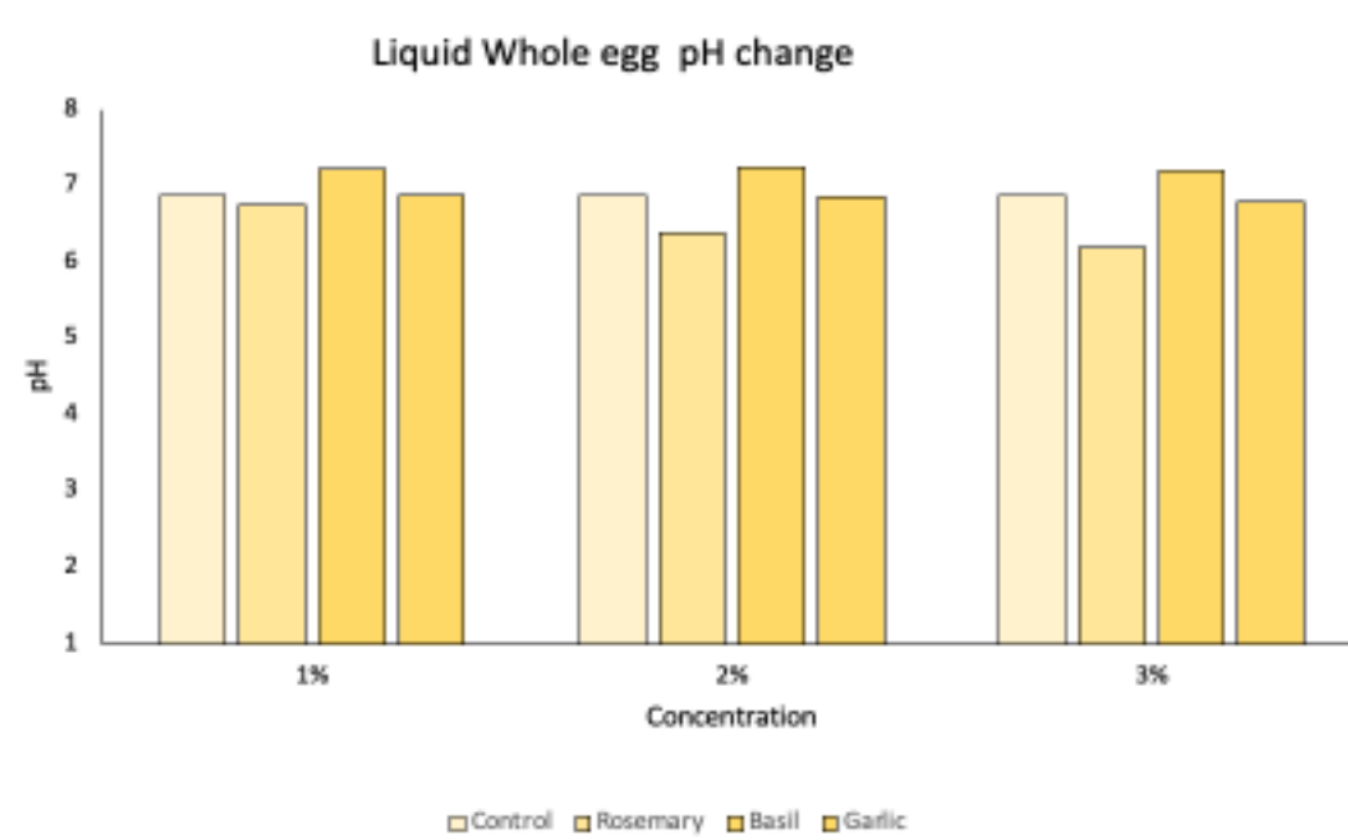


Figure 1: the effect 1,2,3% of rosemary, basil, garlic essential oils on Liquid Whole Egg pH values.

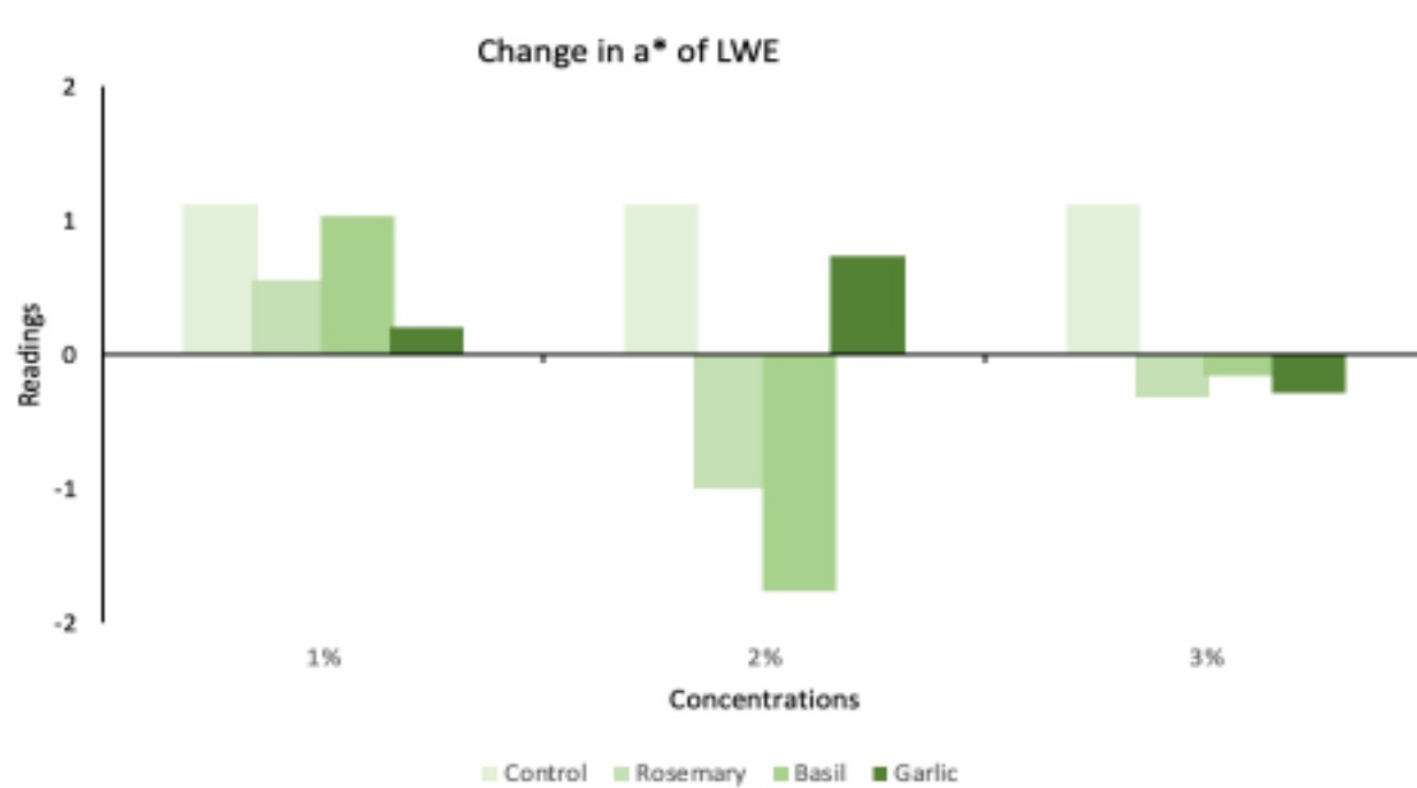


Figure 3: the effect of 1,2,3% of rosemary, basil, garlic essential oils on Liquid Whole Egg color parameters (a*) in comparison to the control group.

All percentage of the 3 essential oils didn't affect the pH of liquid whole eggs significantly. Color parameters L*, a* and b* was not affected significantly with all percentages and all oils

Usually, whole liquid eggs are known to be a shear thinning fluids where $n < 1$ but in this case all n values were > 1 , this can be due to the pH reduction of the liquid whole eggs after adding all oils it may affect the egg protein structure and cause this effect, a previous study about dairy products found that pH reduction of products changed them from shear thinning behavior to shear thickening behavior this could be the same case here

Sample	Tau0	K	n	FRAP value g/L
Control	0.104	0.006	1.083	19.3
Rosemary 1%	0.102	0.005	1.091*	23.4*
Rosemary 2%	0.102	0.005	1.100*	24.1*
Rosemary 3%	0.102	0.005	1.107*	24.4*
Basil 1%	0.111	0.004	1.134*	21.8*
Basil 2%	0.111	0.004	1.130*	22.3*
Basil 3%	0.127	0.005	1.108*	23.6*
Garlic 1%	0.100	0.005	1.110*	21.6*
Garlic 2%	0.136	0.004	1.142*	22.1*
Garlic 3%	0.110	0.004	1.141*	22.7*

Table 1: the effect of adding rosemary, basil, and garlic essential oils on actual and measured results of Herschel-Bulkley model and FRAP values in comparison to control at different percentage 1, 2 and 3%. * is for significantly different groups (Tukey's $p < 0.05$)

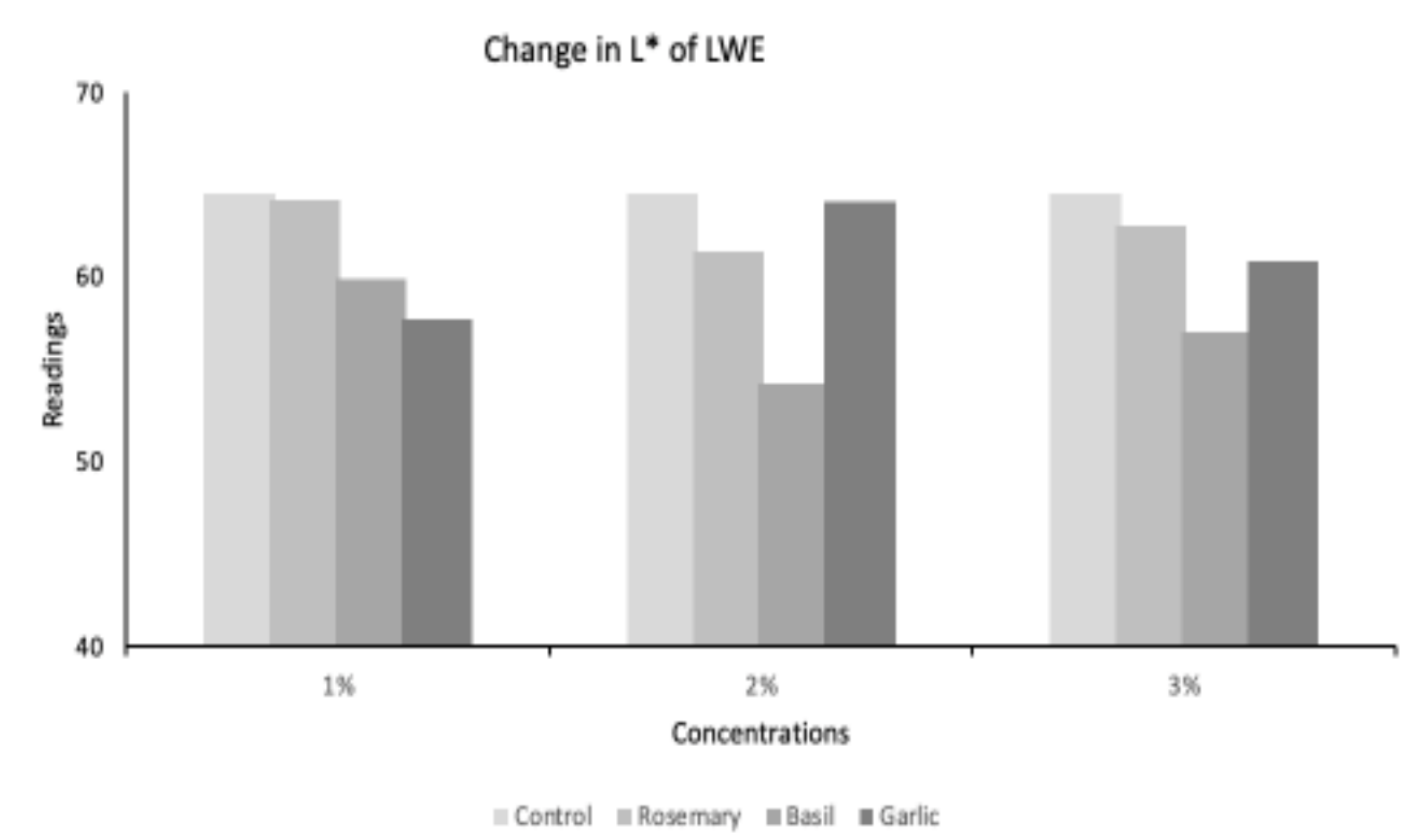


Figure 2: the effect 1,2,3% of rosemary, basil, garlic essential oils on Liquid Whole Egg color parameters (L*) in comparison to the control group.

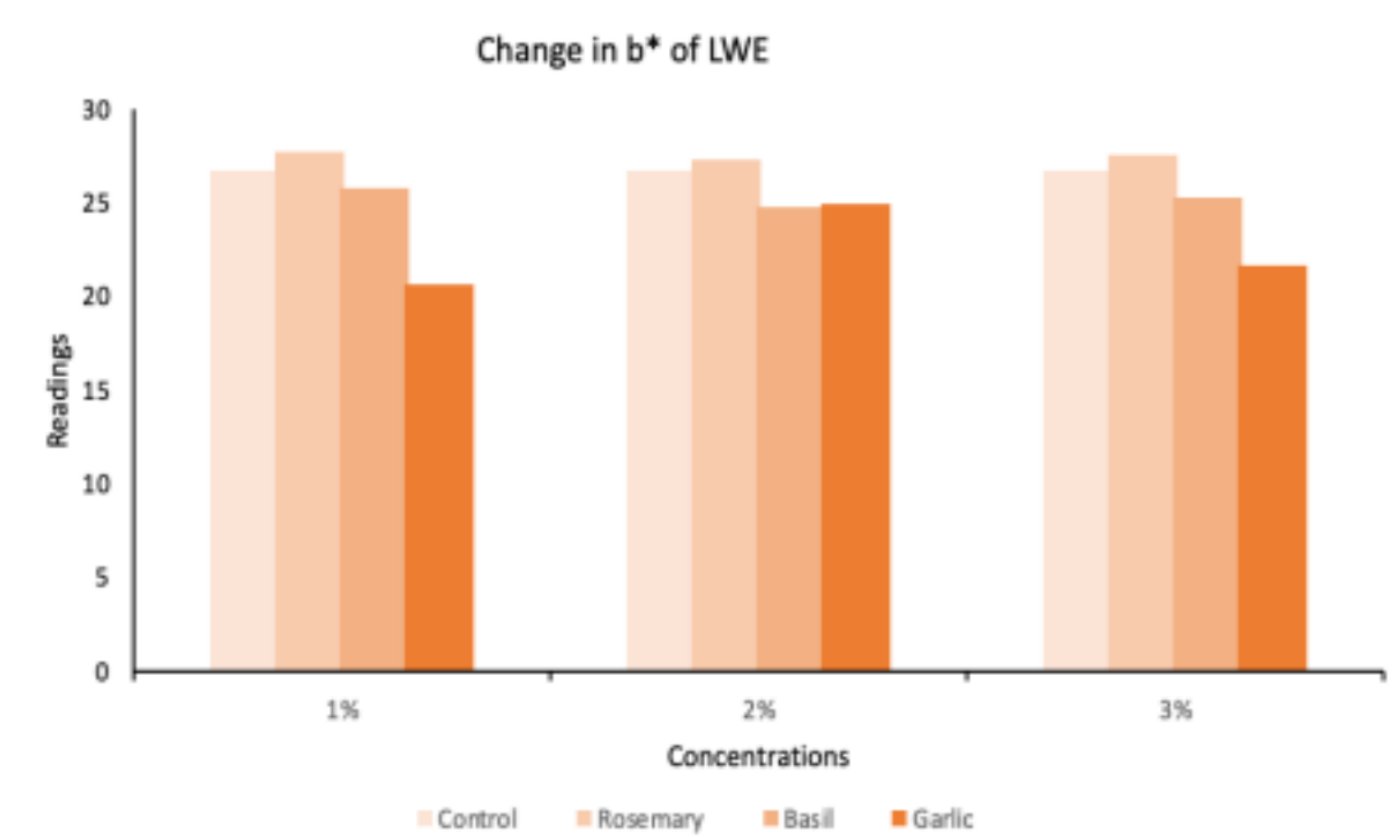


Figure 4: the effect of 1,2,3% of rosemary, basil, garlic essential oils on Liquid Whole Egg color parameters (b*) in comparison to the control group.

Acknowledgment & Contact

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