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EXTEND SHELF-LIFE OF MARINATED CHICKEN

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I. INTRODUCTION

Traditionally, poultry meat has been sold with some basic marinades to enhance its shelf-life, the most common ones being salt and sodium tripolyphosphate. Traditionally, vinegar has been used as a marinade solution due to its ability to impart improved flavor and tenderness in poultry. Understanding the antimicrobial impact of different flavor and preservative systems can help processors maintain the quality of fresh poultry. To validate the antimicrobial effect of Flavoset D366, Cloud 230, Flavoset 5400L, IsoAge D303, and Provian K as marinades were tested for their capability to control growth of spoilage microorganisms in marinated chicken breasts.

II. MATERIALS AND METHODS

Fresh chicken breast pieces were treated with Flavoset D366 (0.5%), Cloud 230 (1%), Flavoset 5400L (0.25%), IsoAge D303 (0.75%), Provian K (0.75%) and a combination of IsoAge D303 (0.75%) with Flavoset 5400L (0.15%) Samples were subjected to two different marination's: Marinate 1 was a vacuum immersion marination salt, sugar, phosphate in chilled water at 4˚C; Marinate 2 was a vacuum immersion marination with salt, sugar, oil, honey powder, garlic powder and soy sauce powder and water at 4˚C. Brine solution (without preservative) served as control. Treated samples (~25 g) were vacuum-packed and stored at 4°C for up to 30 days. On each sampling day, triplicate samples were enumerated for lactic acid bacteria (LAB), *Pseudomonas*, Enterobacteriaceae and aerobic plate count (APC). Spoilage threshold was set at 7 log cfu/g for APC.

DESCRIPTION	QTY%
SALT	42
PHOSPHATE STPP E451i	23
PHOSPHATE SHMP POWDER E452i	2
PHOSPHATE TCP POWDER FINE E341III	0.5
SUGAR CASTER	32.5

Thehe above premix is used as control at 10:90 with cold water. Injection rate at ~12% of the meat

III. RESULTS AND DISCUSSION

In Marinate 1 : Flavoset D366 (0.5%), Cloud 230 (1%), Flavoset 5400L (0.25%), IsoAge D303 (0.75%), Provian K (0.75%) and combination of IsoAge D303 (0.75%) with Flavoset 5400L (0.15%) were effective in controlling the spoilage with APC counts below 7 log cfu/g until day 13,8,10,18,21 and 18 respectively while the control reached spoilage limit by Day 5 ($P<0.05$). LAB, *Pseudomonas* and Enterobacteriaceae were below APC except for control.
In Marinate 2 : Flavoset D366 (0.5%), Cloud 230 (1%), Flavoset 5400L (0.25%), IsoAge D303 (0.75%), Provian K (0.75%) and combination of IsoAge D303 (0.75%) with Flavoset 5400L (0.15%) were effective in controlling the spoilage with APC counts below 7 log cfu/g until day 17, 17, 17,10,20 and 17 respectively while the control reached spoilage limit by Day 7 ($P<0.05$). LAB, *Pseudomonas* and Enterobacteriaceae were below APC except for control.

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Table 1 – Percentage Increase in Shelf-life of marinated Chicken

		Marinate 1 (Plain)		Marinate 2 (Honey Soy)	
Sl.No.	Treatment	Days to (7 log cfu/g)	% Increase in shelf-life	Days to (7 log cfu/g)	% Increase in shelf-life
1	Control	5	0	7	0
2	Flavoset D366 0.5%	13	160%	17	142%
3	Cloud 230 1%	8	60%	17	142%
4	Flavoset 5400L 0.25%	10	100%	17	142%
5	IsoAge D303 0.75%	18	260%	10	42.80%
6	IsoAge D303 (0.75%) +Flavoset 5400L (0.15%)	21	320%	20	185.70%
7	Provian K 0.75%	18	260%	17	142%

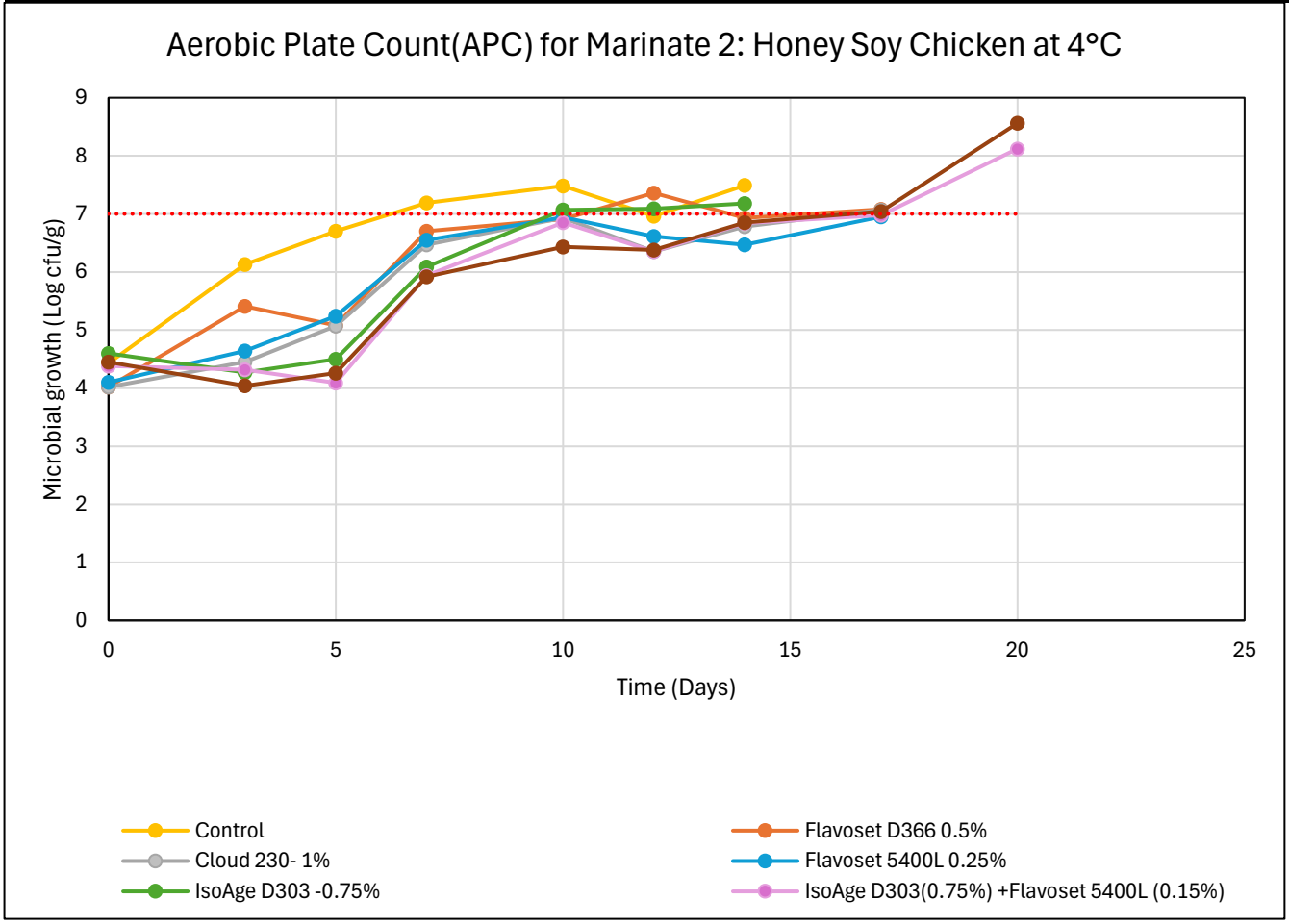


Figure 1. Aerobic plate Count of Marinate 2 at 4˚C

IV. CONCLUSION

Both marinates with ingredient solutions exhibited a significant ($P<0.05$) increase in shelf-life as compared to control. This provides processors with solutions to extend the microbial stability and poultry meat quality with minimal changes to its sensory quality.

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