

RESEARCH BRIEF

COMPANION



PROOF OF CONCEPT: CAN PLASMA INCREASE FRESH MEAT INCLUSION WHILE PRODUCING QUALITY KIBBLE?

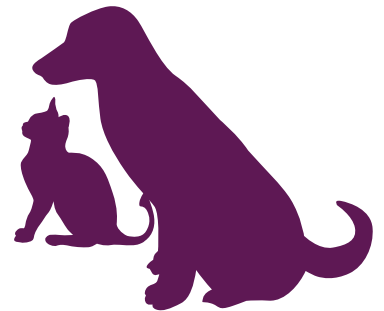
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BACKGROUND INFORMATION

Increasing fresh meat inclusion in dry kibble can be challenging. As fresh meat feed rates are increased, depending on the matrix, the ability to extrude quality kibble may be impacted. Spray dried plasma (SDP) has historically been used in wet pet foods to increase water holding, binding, and fat emulsification properties to maintain quality product.

STUDY OBJECTIVE

The objective was to test the concept of using SDP during the extrusion process to allow for higher fresh meat feed rates beyond the limit with the current matrix.



EXPERIMENTAL PROCEDURE

Multiple test runs were completed on the TX 85 twin screw at the Wenger technology testing center to evaluate combinations of dry blend feed rates along with various SDP and fresh meat feed rates. The dry blend feed rate was established with target fresh meat feed rates to produce quality kibble. Once this was established, fresh meat feed rates were increased to determine limits with current matrix without the addition of SDP. Once limits were determined in the control, the extruder was cleaned out, reset, then different SDP levels from 2.5 to 10% feed rates were tested with the dry blend and fresh meat feed rates were again increased to determine limits for each level of SDP. Limits of fresh meat feed rates were determined by the extruder inability to continue production of kibble.



Dry Blend added by main feed line to extruder

SDP added by auxiliary bin

Fresh Meat added by green line



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RESULTS AND DISCUSSION

TABLE 1. GRAIN FORMULA - CONTROL

MEAT FEED RATE, %	SDP FEED RATE, %	CP, %	DURABILITY
25	0	31.2	98.6
35	0	31.3	No sample - soft kibble

GRAIN FORMULA - Control

- Good kibble at 25% fresh meat feed rate.
- Control limited at 35% fresh meat feed rate to produce quality kibble.

TABLE 2. GRAIN FORMULA - WITH VARYING FEED RATES OF SDP

MEAT FEED RATE, %	SDP FEED RATE, %	CP, %	DURABILITY
25	10	33.9	97.60
30	10	34.0	97.56
35	10	34.2	97.80
40	10	33.9	98.20
45	10	34.5	98.22

SDP FEED RATE, %	CP, %	DURABILITY	SDP FEED RATE, %	CP, %	DURABILITY
5	33.9	98.47	2.5	33.0	97.49
5	33.6	99.00	2.5	33.1	98.00
5	34.4	98.51	2.5	33.0	98.60
5	34.3	98.51	2.5	RUN DISCONTINUED DUE TO INSUFFICIENT PRODUCT	
5	33.9	98.47			

GRAIN FORMULA with varying feed rates of SDP

- SDP at 5 and 10% feed rate resulted in moving up fresh meat feed rates from 25 to 45%.
- Both 5 and 10% SDP feed rate limited at 45% fresh meat feed rate.
- SDP at 2.5% feed rate move up fresh meat feed rate to 35% and was discontinued due to insufficient dry blend product to continue the run.

SUMMARY

Overall, inclusion of SDP feed rates from 2.5 up to 10% in grain formulations allowed for increased fresh meat feed rates up to 45% depending on the feed rate of SDP.

