

## **Effect of spray dried plasma compared to egg white or whole egg as functional binders in canned pet food**

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Many different binders are used in canned pet food providing functionality such as gelling, texture, and protein content. Spray dried plasma (SDP) is a consistent high protein ingredient commonly utilized in wet pet food to provide texture and for water binding and fat emulsification characteristics. The objective of the study was to evaluate functionality of three different binders: egg white, whole egg, and SDP in chunks recipes at four inclusions levels (0, 2, 4, and 6%.) Canned petfood batches were replicated 3 times with each condition using the same recipe containing different raw materials, mainly derived from chicken and pigs, with control (no binder) and level of all binders in each replication. Thus, 3 batches per binder and level were produced for a total of 9 batches. The binder was included to partially replace poultry carcass in the chunks. Cans of chunks and gravy were produced with the ratio of 50:50 chunks to gravy and cooked at 121°C for 1 hour. Cans were stored at room temperature for 14 days before product measurements. Within each batch, 6-9 cans were evaluated for protein, texture, hardness, springiness, cohesiveness, chewiness, and gravy absorption. Protein was similar at 2% inclusion between binders. At 4% binder inclusion, protein was highest ( $P < 0.05$ ) with SDP and egg white compared to whole egg and control; while 6% inclusion resulted in highest ( $P < 0.05$ ) protein with egg white followed by SDP, whole egg, and control. Texture was increased ( $P < 0.05$ ) with SDP and egg white compared to whole egg and control at 2% and 6%, while at 4% inclusion SDP was the highest ( $P < 0.05$ ) compared to all other binders. Hardness was highest ( $P < 0.05$ ) with SDP at 2 and 4% compared to all binders; while at 6% inclusion egg white was highest followed by SDP, whole egg, and control. Cohesiveness, springiness, and chewiness were highest with SDP at all levels compared to other binders. Gravy absorption into the chunks with 2% binder inclusion was increased ( $P < 0.05$ ) with SDP and egg white, similar between all binders at 4% but greater than control, and highest with egg white at 6% followed by SDP, whole egg, and control. Overall, higher levels of binder increased protein, hardness, texture, and gravy absorption. Spray dried plasma may be used as an alternative for egg white and whole egg in canned pet food.



## MATERIALS AND METHODS

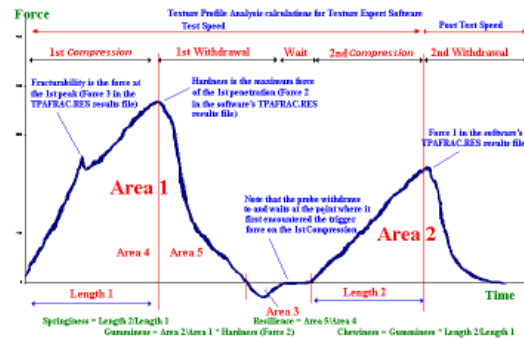
- OBJECTIVE:
  - To evaluate functionality of 3 different binders: egg white, whole egg, and SDP in chunk recipes at four inclusion levels (0, 2, 4, and 6%).
- PROCEDURES:
  - Canned batches were replicated 3 times using the same recipe.
  - Inclusions of the SDP and Egg products (Egg Powder and Egg White) were included at 2, 4 & 6% replacing poultry carcass

INGREDIENTS	CONTROL	2% FP	4% FP	6% FP
Poultry carcass	41.1	39.1	37.1	35.1
Pig lung and trachea	18.6	18.6	18.6	18.6
Poultry necks	9.2	9.2	9.2	9.2
Pig liver	2.0	2.0	2.0	2.0
Wheat flour	6.0	6.0	6.0	6.0
SDP/Egg Powder/Egg White	0.0	2.0	4.0	6.0
Locust bean gum	0.44	0.44	0.44	0.44
Common salt	0.50	0.50	0.50	0.50
Sodium polyphosphate	0.50	0.50	0.50	0.50
Sodium bicarbonate	0.16	0.16	0.16	0.16
Vit-Min Premix	0.30	0.30	0.30	0.30
Water	21.2	21.2	21.2	21.2
<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

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## MATERIALS AND METHODS, cont.

- PROCEDURES:
  - Cans of chunks and gravy were produced.
  - Ratio of 50:50 chunks : gravy
  - Cooked at 121 C for 1 hour.
  - Stored at room temperature for 14 d prior to measurements.
  - Multiple cans per batch utilized for measurements for:
    - Texture
    - Hardness
    - Springiness
    - Cohesiveness
    - Chewiness
    - Gravy absorption

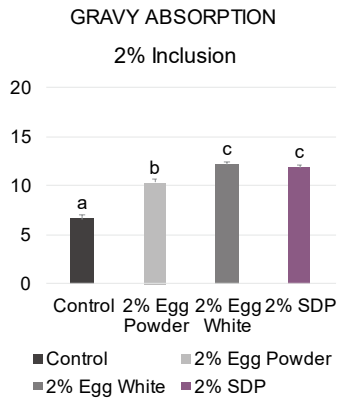


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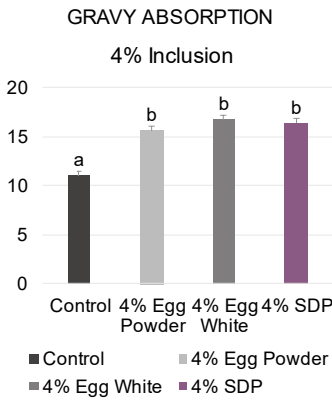
# RESULTS

## COMPARING THE EFFECT OF SDP VS EGG POWDER AND EGG WHITE PROTEIN IN WET PET FOOD RECIPES

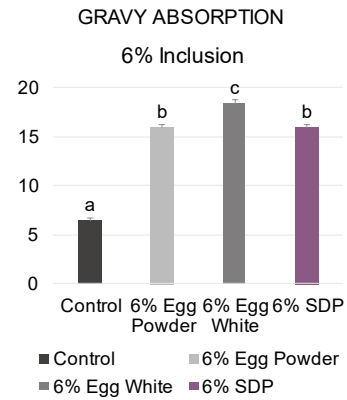
### GRAVY ABSORPTION IS INCREASED



abcd = P < 0.05



ab = P < 0.05

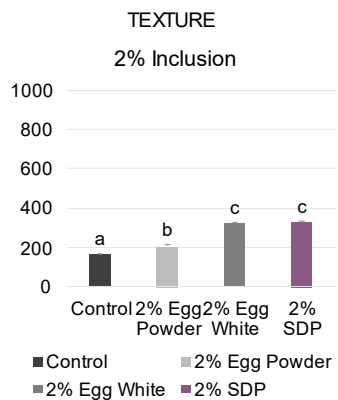


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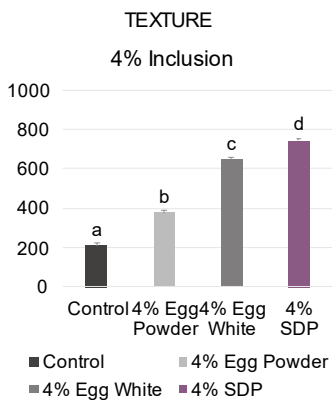


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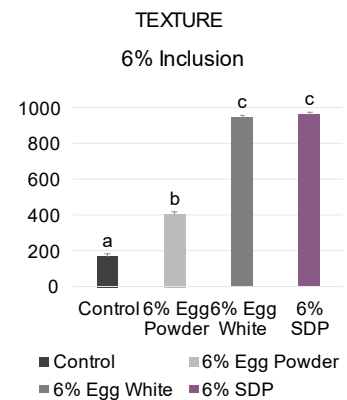
### TEXTURE IS INCREASED



abc = P < 0.05



abcd P < 0.05

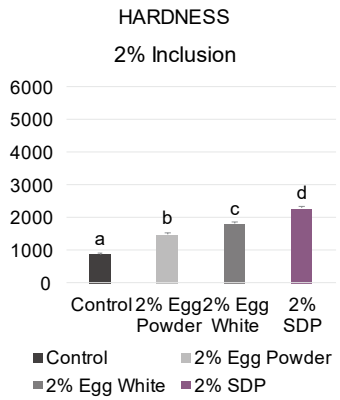


abc = P < 0.05

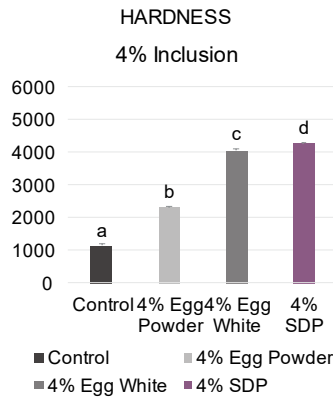


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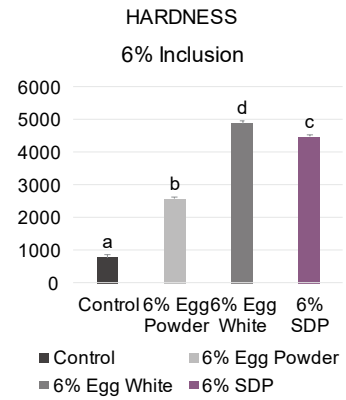
HARDNESS IS INCREASED



abcd = P < 0.05



abcd = P < 0.05

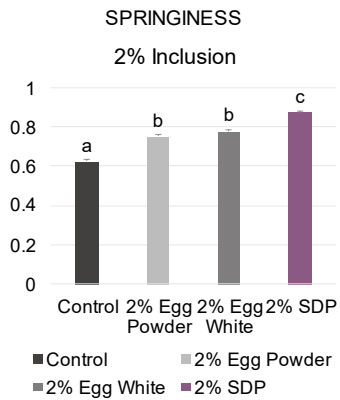


abcd = P < 0.05

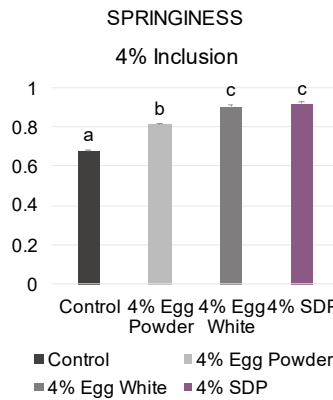
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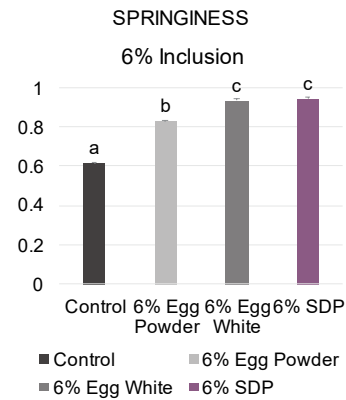
SPRINGINESS IS INCREASED



abc = P < 0.05



abc = P < 0.05

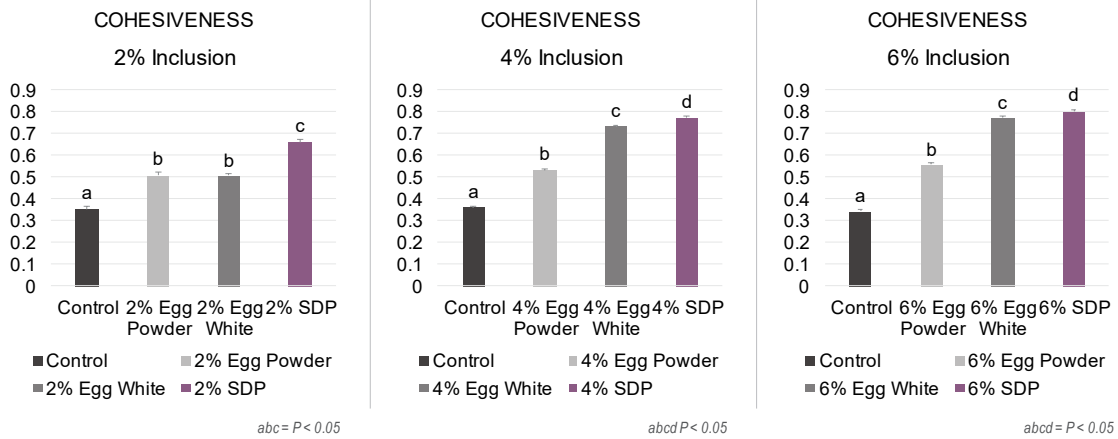


abc = P < 0.05

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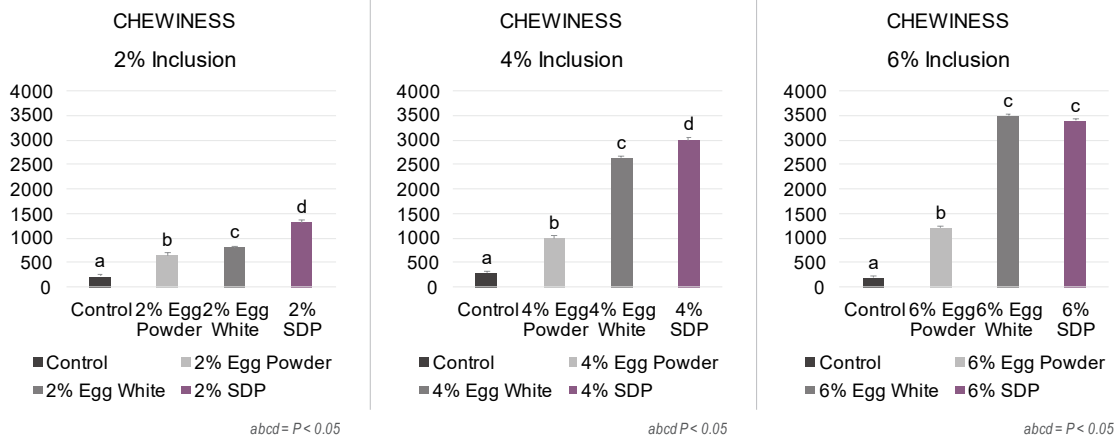
COHESIVENESS IS INCREASED



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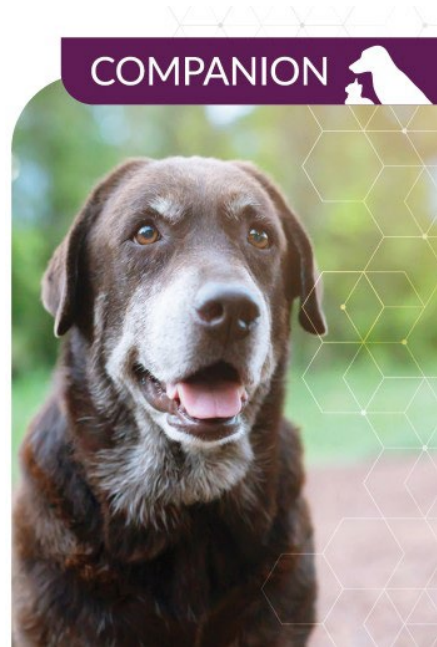
CHEWINESS IS INCREASED



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## CONCLUSIONS

- Higher binder levels increased:
  - Protein
  - Hardness
  - Texture
  - Gravy absorption
- SDP may be used as an alternative for egg white and whole egg in canned pet food.



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