

# Animal Blood Study Summaries

## EFFECTS OF SPRAY-DRIED ANIMAL PLASMA ON INTAKE AND APPARENT DIGESTIBILITY IN DOGS<sup>1</sup>

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### Implications

Addition of spray-dried animal plasma to dry dog food kibbles improved digestibility of most nutrients and decreased fecal dry matter. These data suggest that spray dried animal plasma can be applied topically or included inside the kibble with equal results. The nature of the improvement is unclear but may be mediated through changes in intestinal function. Additional research is indicated to more completely understand the effects of spray-dried animal plasma on intestinal physiology.

## ADMINISTRATION OF BIOACTIVE PROTEINS TO MATURE HORSES IMPROVES GAIT KINEMATICS

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### Results

Mean stride length (Figure 1) of the front limb tended to increase linearly ( $P = 0.07$ ) at d 14 with increasing levels of bioactive proteins. Similarly, at d 28 stride length of the front limb increased linearly ( $P = 0.05$ ) with increasing dose of bioactive proteins. Stride length of the hind limb tended to increase at d 14 ( $P = 0.10$ ) and increased linearly at d 28 ( $P = 0.02$ ) with increasing levels of bioactive proteins. Knee range of motion (Figure 2) increased linearly at d 14 and d 28 with increasing dose of bioactive proteins ( $P < 0.01$ ).

### Conclusions

In conclusion, consumption of bioactive proteins in mature, exercised horses resulted in improved gait kinematics as evidenced by increases in stride length and knee range of motion. The response was dose related

# **EFFECT OF BIOACTIVE PROTEINS ON INTESTINAL HEALTH AND GUT FUNCTION**

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## **Bioactive Proteins Across Multiple Species**

Through continuing research, it was discovered the reason pigs given bioactive proteins thrived is because bioactive proteins aid in maintaining normal immune responses and help in reducing inflammation associated with stress. APC understood they had a very unique and potent solution for animals with challenges, particularly during stress.

They also recognized that stress isn't unique to pigs. Whenever any animal—calves, horses, dogs, even humans—encounters a challenge to their immune system, the result is inflammation. This can occur as a local response, for example when the area around a cut becomes inflamed. It can also occur as a systemic response, such as when an animal gets a “bug” and multiple organ systems of the body respond including the lungs, nasal passages, intestines and even muscles, providing energy to fight the challenge, which slows their normal ability to grow or perform to their potential.

## **Bioactive Proteins Summary**

Collectively, the results of these experimental studies suggest that bioactive proteins improve intestinal mucosa integrity and reduce inflammation, and therefore the overstimulation of the immune response in animals. This allows more of the available resources and nutrients to be used for other productive functions, rather than being diverted to support the immune response.

It is worth noting that bioactive proteins also have systemic effects and therefore may reduce overstimulation of the broader common immune system and reduce inflammation. This is the reason why bioactive proteins help improve recovery after exercise in performance horses and improve mobility in senior horses.

# **INFLUENCE OF DIETARY PLASMA PROTEINS ON SUPPORTING ANIMAL IMMUNITY SYSTEMS**

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## **Conclusions**

In summary, the use of SDP is well accepted in animal agriculture. Spray-dried plasma and/or spray-dried serum reduce the over-stimulation of the immune response in animals (ie. pigs, rats), thereby conserving nutrient utilization for supporting the immune response and allowing nutrients to be utilized for productive purposes. Similar modulation effects of SDP or SDS on inflammation and intestinal barrier function may be occurring in other animals such as calves as well. Research continues to elucidate the important role of these proteins in SDP in animal agriculture.

**JOURNAL OF EQUINE VETERINARY SCIENCE, AUGUST 2016**  
**THE EFFECT OF SERUM-BASED BIOACTIVE PROTEINS FOR THE PREVENTION OF**  
**SQUAMOUS GASTRIC ULCERS IN HORSES**

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The objective of this study was to determine the effects of serum-based bioactive proteins on the prevention of squamous gastric ulcer formation in horses in moderate exercise programs over a 21-day period. Horses without ulcers were identified and randomly assigned to treatment or control group. Horses were subjected to a training program which induced squamous gastric ulceration in control horses. In horses treated with 210-g bioactive proteins, the incidence of squamous gastric ulcers was significantly reduced ( $P = .0001$ ) compared to control horses. In horses treated with 80-g bioactive proteins, 66.67% (10/15) of the control horses developed squamous gastric ulceration compared to 33.55% (5/15) of those administered bioactive proteins. In conclusion, dosing horses with bioactive proteins derived from serum was effective for preventing gastric ulcers in horses experiencing stress from exercise or training.

#### Highlights

- Bioactive serum proteins can prevent the formation of gastric ulcers in horses.
- There appears to be a dose-related effect of these proteins on prevention of gastric ulceration.
- Bioactive serum proteins can decrease the incidence in ulcer formation in horses subjected to the stress of training and hauling.

Full article available to download at [http://www.j-evs.com/article/S0737-0806\(16\)30021-1/abstract](http://www.j-evs.com/article/S0737-0806(16)30021-1/abstract)

**SPRAY DRIED PLASMA AS AN ALTERNATIVE TO ANTIBIOTICS IN PIGLET FEEDS,**  
**MODE OF ACTION AND BIOSAFETY**

Anna Pérez-Bosque, Javier Polo and David Torrallardona

#### Conclusions

There is clear evidence supporting SDP as an effective alternative to antibiotics for piglets, particularly during the first weeks post-weaning. In general, SDP had better or equivalent efficacy on pig performance compared with antibiotics or other alternative antimicrobial products. The efficacy of SDP in animal feed appears to be related mainly to an improved barrier function of the gut mucosa and the modulation of the mucosal immune response. The additive responses observed when SDP is offered in combination with antibiotics or other alternative products, suggest differences in their modes of action and this is an area that deserves further research. The available biosafety studies provide enough evidence to support that commercial SDPP is a safe product for pigs.

# **EFFECTS OF SPRAY-DRIED ANIMAL PLASMA ON FOOD INTAKE AND APPARENT NUTRIENT DIGESTIBILITY BY CATS WHEN ADDED TO A WET PET FOOD**

**Carmen Rodríguez, Neus Saborido, Jesus Ródenas, Javier Polo**

## **Conclusions**

SDAP in canned chunk and gravy food for cats improved apparent digestibility of dry matter, crude fiber, ash, calcium, and phosphorus. These results are similar to those reported for dry kibbles containing SDAP in digestibility studies with dogs (Quigley et al., 2004). In addition to the well-known superior physicochemical properties of SDAP as a binder, functional components in SDAP apparently retain at least some of its biological activity through high pressure and thermal processing conditions to enhance digestibility in both canned and dry extruded recipes.

## **Highlights**

- Under these study conditions, no differences in body weight, feces production and fecal score were found between treatments.
- The addition of SDAP to the recipe improved apparent dry matter, crude fiber, ash, calcium and phosphorus digestibility.
- Results suggest that some biologically active components in SDAP are able to survive the sterilization and canning process.
- Results suggest that SDAP may retain biological functions with beneficial effects on the digestive system of adult cats.