

DRAFT

**FEED AND LIVESTOCK DRUGS INSPECTION PROGRAM (FLDIP)
TECHNICAL ADVISORY SUBCOMMITTEE (TASC)
California Department of Food and Agriculture (CDFA)
WEB CONFERENCE MEETING**

**October 22, 2021
10:00 AM**

MINUTES

TASC Members

Dr. Marit Arana, Chair
John Martin
Dr. Xixi Chen

CDFA Staff

Jenna Leal
Rachelle Kennedy
Cathryn McCandless
KC Gutenberger
Joshua Bingham

Interested Parties

Dr. Ed DePeters
Dr. Katherine Swanson
Maia Zack
Joan Salwen
Albert Strauss
Vivianne Hay
Dr. Breanna Roque

WELCOME AND INTRODUCTIONS

Dr. Marit Arana, Chair, called the meeting to order at 10:00 am. Self-introductions were made, and a quorum was established.

ASPARAGOPSIS FEEDING TRIAL FOR LACTATING DAIRY CATTLE

Joan Salwen of Blue Ocean Barns updated the TASC on the findings of the Asparagopsis Feeding Trial. Salwen stated the Asparagopsis was fed for 50 days on a commercial dairy farm. The goal of the study was to reduce emissions from lactating dairy cattle by 50%; the trial confirmed this hypothesis. Salwen noted the cattle-maintained milk quality and production during the trial. Salwen stated that Iodine and Bromide levels were elevated due to the source of the Asparagopsis, as the product was harvested from the wild, which would be different than the product which would go to market. The product that Blue Ocean Barns is producing will be a seaweed digestive aid product grown under controlled conditions to eliminate the variability of Iodine and Bromide in the final product.

Dr. Breanna Roque provided a synopsis of the feeding trial with results. Dr. Roque noted the feed needed to be slowly introduced to the cattle to improve dry matter intake and acceptance of the feed by the cattle. The Green Feed Machine was used to measure enteric methane emissions. Feed and milk quality were tested, and both were found to be within an acceptable and safe range for animal and human consumption. Methane emissions were measured throughout the trial per cow and over the experimental period. Dr. Roque stated the enteric methane emissions were decreased by over 50% of the baseline methane emissions.

John Martin asked if a Hazard Analysis was conducted on the Asparagopsis feed, specifically identifying any biological, physical, or chemical hazards that could impact animal or human health. Martin noted both CDFA and the feed industry would want a thorough Hazard Analysis conducted prior to the Asparagopsis going to the feed market. Both Iodine and Bromoform levels were identified during the trial discussion; Martin questioned how these potential hazards would be evaluated. Salwen responded that there is no current Hazard Analysis; however, Blue Ocean Barns would be willing to learn more about what that entailed and how to produce a Hazard Analysis.

Martin asked Albert Strauss if there were any concerns related to changes in the milk components associated with feeding Asparagopsis. Strauss did not offer any concerns regarding milk components that were evaluated and reported during the trial.

Dr. Xixi Chen had questions about the food safety perspective of feeding the Asparagopsis feed on a larger scale because the Iodine levels were found to be elevated in the feed and milk. Dr. Chen questioned the use of the wild harvested seaweed with elevated levels of Iodine versus a United States (US)-grown, lower-Iodine Asparagopsis. Salwen stated the Asparagopsis that will be used going forward will be the same species of Asparagopsis and will not be grown in the open ocean that contains higher levels of Iodine. The Asparagopsis that will be used in the future will be grown in controlled tank environments with much lower Iodine levels.

Martin questioned if there could be a safety issue with mixing errors if elevated levels of Asparagopsis were inadvertently mixed into a batch of feed as the Asparagopsis is fed at such small levels of the overall diet. Strauss stated the Asparagopsis would need to be pelletized and added to the grain mix to ensure proper mixing on-farm.

Jenna Leal asked if Blue Ocean Barns had submitted a self-determination of Generally Recognized as Safe (GRAS) with the US Food and Drug Administration (FDA). Salwen noted Blue Ocean Barns is looking for California specific approval and eventually federal approval of the feed. Discussion ensued with Salwen reiterating that Blue Ocean Barns would be submitting a self-determination of GRAS to CDFA.

Leal stated the trial outcomes give the Commercial Feed Regulatory Program (CFRP) good reason to be committed to further analysis and determinations in how to help move this feed product forward to the market. The CFRP will allow the TASC to consider the results of the trial and provide more time to examine the safety data of the Asparagopsis feed.

Dr. Chen stated that the American Association of Feed Control Officials feed approval route would be the preferred route for feed ingredient approval; however, it would take one to two years to go through the process. Dr. Chen recommended moving through the FDA's self-determination of GRAS process as well.

HEMP BY-PRODUCT FEEDING TRIAL FOR LACTATING DAIRY GOATS

Dr. Katherine Swanson updated the TASC on the status of the Goat Hemp By-product Feeding Trial. The hemp by-product residue was a coconut oil-soaked hemp product from which Cannabidiol (CBD) was extracted to produce CBD Oil. This hemp by-product was then repurposed as a feed for lactating goats to assess the safety of feeding a hemp by-product to lactating animals and to assess whether the CBD would transfer into the blood, adipose, or milk that the goats produced. Dr. Swanson noted that the 20-day feeding trial had different treatment groups where goats were fed varying levels of the hemp by-product and that production records were also taken for each individual goat, including feed intake, milk output, and bodyweight. Dr. Swanson stated there were no differences in production between control and treatment fed groups; however, an acclimation period was necessary for goats to eat the hemp by-product. Dr. Swanson reported both Milk Urea Nitrogen and Somatic Cell Counts dropped throughout the trial for the goats fed the treatment feeds.

Cannabinoids were found in blood and milk samples. Adipose sample data has not yet been received. Dr. Swanson stated there was elevated CBD found in treatment groups in the milk compared to the blood samples. Additionally, Tetrahydrocannabinol (THC) was found in both the blood and higher concentrations in the milk, despite the feed samples showing no evidence of THC at initial testing. Dr. Swanson hypothesized this may be accounted for by the sensitivity of the lab equipment which measured the THC in the feed compared to the more highly sensitive equipment which measured cannabinoids in the milk; however, this was an area of further research Dr. Swanson's lab will be exploring. According to Dr. Swanson, the cannabinoids are lipophilic compounds which were predictably more available in the milk compared to the blood.

Martin commented the study was well conducted considering the small number of goats in the trial.

Dr. Chen noted the study appears to be a pilot study which would provide a proof of concept for a larger study.

HEMP BY-PRODUCT FEEDING TRIAL FOR LACTATING DAIRY CATTLE

Dr. Swanson reported a dramatic increase in hemp by-product available for livestock feed since the legalization of Industrial Hemp as a legal crop; however, no current body of literature exists to identify what occurs to the animal and the milk produced by ruminant animals fed this hemp by-product. Dr. Swanson stated her previous research has been conducted on goats as a proof of concept and there is a paucity of research related to lactating dairy cattle fed any hemp by-product. Additionally, Dr. Swanson noted dairy cattle tend to have higher concentrations of fat in their milk compared to prior research conducted on goats as a ruminant model, which may lead to a greater accumulation of cannabinoids, CBD and THC in the milk from cattle fed this by-product.

Dr. Swanson stated the objective of the study would be to evaluate an ethanol extracted hemp by-product to determine if cannabinoids are found in the blood, adipose, and milk of lactating dairy cattle fed the by-product. The hemp by-product would be evaluated for

its nutritive qualities as well. The cannabinoids, heavy metals, and pesticides would be evaluated for safety in the feed samples. Milk, urine, adipose, and blood samples would all be collected to determine if cannabinoids from the hemp by-product are transferred to potential human food products such as adipose and milk.

Dr. Swanson stated that all milk produced from the feeding trial would be ineligible for sale into the human food market and would need to be discarded.

Martin questioned if there was a need for muscle tissue samples to be collected. Dr. Swanson stated this may be able to be added to the research protocol and she will further investigate muscle tissue sampling feasibility.

Dr. Chen stated this was an important study to be conducted and asked if it was likely to find cannabinoids in the milk of the lactating dairy cattle. Dr. Ed DePeters stated that the magnitude of cannabinoids may be greatly enhanced in dairy cattle fed hemp by-products. Discussion ensued.

Leal stated this research could help the CFRP provide information to the legislature when questions about the safety of hemp feed products arise.

MOTION: John Martin moved to recommend accepting this feeding trial to the Feed Inspection Advisory Board (FIAB) for full funding. Dr. Xixi Chen seconded the motion. The motion passed by present subcommittee members with a 3-0 vote, in favor of recommending the Hemp By-product Feeding Trial for Lactating Dairy Cattle to the FIAB for full funding.

CALIFORNIA BYPRODUCT CAPACITY PLANNING RESEARCH PROPOSAL

Dr. DePeters presented a full proposal for a research project which aims to identify an inventory of California's by-product feedstuffs. The goals of the study are to identify the by-product feedstuffs produced in California by region and quantity produced, economic impact of the by-product production, and quantify the individual by-products fed to livestock by category of livestock.

Dr. DePeters noted that there is a limit to by-products that can be incorporated into the rations of livestock due to their nutritional limitations, seasonal challenges, and availability.

Martin stated that there is a lack of information of by-product capacity in California.

Dr. Chen stated this would be a benchmark study for California and would be a good fit for the current emphasis of the Safe Animal Feed Education (SAFE) program. Dr. Chen asked if there would be actionable steps provided to the industry for how to best use the data provided by this study. Discussion ensued.

Leal commented that the information procured from the study would provide baseline data. The data could then be used to advance more research on California's capacity to generate by-products for use in the California livestock feed industry. Discussion ensued.

MOTION: John Martin moved to recommend accepting the California Capacity By-products trial to the FIAB for full funding. Dr. Xixi Chen seconded the motion. The motion passed by present subcommittee members with a 3-0 vote, in favor of recommending the California Capacity By-products to the FIAB for fully proposed funding.

PUBLIC COMMENTS

No public comments were made.

NEXT MEETING/AGENDA ITEMS

The next meeting will be determined for a date between April and May 2022.

Future agenda items include:

- Hemp By-product Feeding Trial for Goats Conclusion and Publication Update
- Hemp By-product Feeding Trial for Cattle Update
- California By-product Capacity Planning Update
- Asparagopsis Feeding Trial and self-determination of GRAS status
- Camelina Revised Proposal
- Identify Areas of Research Need for 2023

ADJOURNMENT

MOTION: John Martin moved to adjourn the meeting; Dr. Xixi Chen seconded. The motion passed by present subcommittee members with a 3-0 vote.

The meeting was adjourned at 12:49pm.

Respectfully Submitted By:

ORIGINAL SIGNED BY JENNA LEAL

Jenna Leal, Program Manager
Feed and Livestock Drugs Program

10/22/2021

Date