

Oxidation Group Summary from PFA Summer 2019

The PFA Oxidation Group continues to make significant strides with six unique projects for the improvement of ingredients and finished pet food product quality. These projects were determined during the PFA Summer 2018 meeting. Significant efforts have been made on three projects. The other three projects will gain momentum soon as they require additional resources as well as alignment with other activities.

Oxidation Group Co-Chair, Dr. B.J. Bench of the Tyson Foods Ingredient Solutions Group, presented an update on activities within the working group.

The first, was the development of a best practices for product sampling across various mode of loading. A team developed a very extensive survey that covered bulk truck, bags, totes, rail car, and shipping containers and inputs were derived from ingredient suppliers, renderers, and pet food manufacturers. Survey questions also included tools that are utilized for collecting samples as well as depths, amount collected, frequency, locations, and lastly composites sample generation strategies. The survey was sent out again as participation was encouraged during the meeting. Final review and data will be presented at the next PFA meeting.

The second project updated was the standardization of peroxide value (PV) testing. In the previous meeting, it was proposed to have a one-time study that encompassed various methods utilized in the ingredient and pet food industries to determine method variations. This study was conducted the first week of April at the Tyson Foods Food Safety & Research Laboratory with industry experts on-site to perform the various methods over a three-day period on 75 various samples that included protein meals provided by multiple companies ranging from poultry, beef, pork, lamb, fish, and exotics. The study plan was reviewed with comments from representatives from 24 ingredient suppliers, laboratories, antioxidants suppliers, pet food manufactures, and various regulatory agencies. PV methods utilized on-site were ether extraction followed by AOCS Cd-8b-53 manual and auto-titrations and Fox II. Commercialized rapid platforms included SafTest and CDR Food Lab[®]. Other methods evaluated as part of the study to generate data included anisidine value, hexanal, and free fatty acids. To complement this study, samples were also sent to Alpha MOS to evaluate electronic nose (E-NOSE) technology and profile the headspace of samples and determine if there is any correlation to peroxide value or any other analyses. Data was presented for this study comparing the PV methods as well as the E-NOSE. Data demonstrated the variation in methods as well as showed the potential of new innovative technologies shedding light into the PV phenomenon. Data is being further evaluated as an enormous amount was generated over this short time period and will be updated at the next meeting.

The third project is centered around a check sample program for people testing non-oil matrices for PV. There are very limited schemes that exist globally that include PV. To assess 3rd party laboratory variation, the oxidation group send 15 samples to seven major laboratories in which eight methods were used to determine PV of various matrices. Data was presented for this study demonstrating that if claims were filed due to PV, results would vary dependent upon the agreed 3rd party laboratory utilized. This work has been presented and will be brought up with bodies the develop and distribute current check samples schemes to see if PV can be added.

To wrap up the oxidation group program, Dr. Lili Towa, Senior Application Support Specialist and U.S. Lab Manager for Alpha-MOS, presented "Pet Food Flavor Quality Control Using Ultra-fast GC Smell

Analyzer and Chem-FET Taste Analyzer.” She presented various applications of Alpha-MOS technologies in how to assess various states of oxidation, comparative flavor profiling, and determination of freshness of various matrices.