ASBC THE SCIENCE OF BEER

New and Alternative Methods of Analysis

Annual Meeting
La Quinta, CA
June 14-17, 2015

N&A Function

The function of this subcommittee is to collect, from various sources, new and alternate methods of analysis that may be useful to the industries our Society serves. These methods are reviewed to establish their merit and usefulness, and a recommendation regarding collaborative testing is made to the Technical Committee. The subcommittee tracks and records the disposition of each method considered. The subcommittee is also charged with the responsibility of periodically reviewing existing methods for accuracy and usefulness

How It Works

Each year, the ASBC New and Alternative Methods of Analysis Subcommittee seeks input **through polling** on potential new methods that may be of value to the brewing industry as well as improvements to existing methods. Results of the polling are discussed with the membership at the ASBC Annual Meeting and the Technical Committee prioritizes activities to be accomplished based upon the needs of the membership.

How are methods evaluated for MOA Inclusion?

- Newly published methods, novel techniques or commonly used protocols are assessed by collaborative study
  - Typically includes participation from laboratories worldwide
    - Good participation from Americas/Europe/Japan
  - Contribution from EBC/BCOJ is actively encouraged
- ASBC Technical Committee operation:
  - Tech Com forms subcommittee with ~8-15 laboratories
  - Method repeatability/reproducibility checked
  - Data reviewed by Tech Com and published in J ASBC (4th quarter of year)
- Subcommittees are formed based on member requirements and feedback from surveys
  - Includes a range of activities e.g. flavor wheel production, sensory analysis tools, 'grow your own lab' information

Analytical Poll Summarized Results

What does this method measure and how would it be useful?	Equipment	Reference	Status?
Limit dextrinase, a-amylase, b-amylase megazyme methods undertaken together to better prediction of potential malt fermentability. A replacement for malt DP analysis	Spectrophotometer (micro plate reader), multichannel pipettes, low speed centrifuge that can be adapted to take deep well 8x12 plates	EVANS, D.E., (2008) Journal American Society of Brewing Chemists, 66:215-222. EVANS, et.al., (2010) Journal of the Institute of Brewing, 116: 86-97.	
total beta-glucan in barley and malt	analytical balance, laboratory mill with 0.5mm screen, spectrophotometer	AACC Method 32-22	
Yeast counts. By monitoring the weight, and not the volume, you can get more accurate yeast counts on yeast slurry.	Triple Beam scale, Hemocytometer, microscope, methelyene blue, mechanical counters		
Yeast vitality	pH meter, stir plate, conical stir bar	Gabriel, Petr, et al. "Optimised acidification power test of yeast vitality and its use in brewing practice." Journal of the Institute of Brewing 114.3 (2008): 270-276.	
Hot Water Extraction Wort instead of Congress Wort. It can be used for color, extraction, beta glucan, etc.	Magnetic stirring hot plate and/or hot water bath		
Dissolved carbon dioxide, total package oxygen	gehaltemeter/dissolved oxygen meter and all		

Microbiological Poll Results

Subcommittee Chair will Contact

Instrument Capability:

A significant percentage of laboratories with fluorescent microscope and Thermocycler/electrophoresis/PCR capability. Based on this I think we should focus specifically on methods of interest relating to these instruments. Examples are looking at utilizing quick/rapid incubation in combination with identification/detection systems.

Examples are:

1. Working with Vermicon (fluorescent micrscopy probes for staining and identifying bacteria) to see if others with fluorescent microscopes can in a subcommittee utilizing their microscopes.
2. Survey users to identify which groups have a flexible realtime PCR platform for trialing various PCR kits for identification and detection of major yeast and bacteria: PIKA Weihenstephan Kits, Genial Kits, Biotecon Kits, etc.
3. Rapid methods round table. Informal subgroup at annual meeting for scientists to discuss rapid methods they are using, their advantages and limitations.

Cont. Microbiological Poll Results

Strict Anaerobe Testing:

A significant percentage of laboratories testing for strict anaerobes are not using current ASBC methods available. This is an indication that we need to provide updated methods for strict anaerobe detection.

Examples are:

1. Introduce new less selective medias compared to our current SMMP for recovering Pectinatus and Megasphaera such as NBB broth, FastOrange, MRS, Barney Miller Broth, etc. and combine them with identification methods listed above under instrument capability. The medias listed here are from the responses.

Rapid Methods

People polled were using PCR and other methods. Identification seemed to be a common interest.

1. Methods mentioned above were staining and RT-PCR.
2. In addition we could look at brewPal plus PCR for beer spoiling lacto/pediococcus.

Cont. Microbiological Poll Results

Yeast Strain Purity

Most people are not using our current MOA or any methodology for yeast strain purity

1. We could look at Brett PCR kits for detecting cross contamination for breweries utilizing that strain plus others.
2. POF test method is in process.
3. Long term look for methods easy to incorporate into breweries.

Membership Input

What does this method measure and how would it be useful?	Equipment	Reference