WHAT IS ACID ABOUT ACID CIGARS?

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ACID cigars – really acid?

- Not that we could tell. When looked at filler pH values we obtained for three brand-styles of acid cigars, they were not typical of other cigars we tested or reported in the literature [Koszowski et al., Nic Tob Res. 2018 Feb 7;20(3):393-398]
- Cigars purchased at a local cigar shop and a C-store
  - ACID -- Kuba Kuba (Blue and Green), Blondie
  - Middleton's Black & Mild Wood Tip
  - Rocky Patel
  - $1.49 wrapped but unlabeled
- Odor of acid cigars was more that of a man's cologne than what one would expect for a typical flavored cigar

What others have written on ACID cigars

- Halfwheel.com on ACID Kuba Arte (8/13/19)
  - …that was the case with Drew Estate, who celebrated the 20th anniversary of its ACID brand of infused cigars by releasing not one, but two very different cigars: the appropriately named ACID 20 and the subject of today's review, ACID Kuba Arte…
  - In terms of the actual cigar, the ACID Kuba Arte is a 5 13/16 x 54 torpedo incorporating a broadleaf maduro wrapper covering an Indonesian binder as well as filler tobaccos sourced from Nicaragua. Each cigar carries a retail price of $11.90…
- Drewestate.com on its ACID cigars
  - The ACID smoking experience is like no other. Each blend holds new explorations in tobacco curing and blending that are the closest guarded secrets in the industry

What others have said about ACID cigars

- Thomposoncigar.com on ACID cigars
  - Acid cigars are infused with unique, rich, aromatic flavors made from premium tobaccos available in a variety of shapes, sizes and wrappers
- JRCigars.com on ACID cigars
  - ACID fans have learned throughout the years not to ask about these mysteriously blends because the recipe book will always remain a deep dark secret that is well hidden in the Drew Estate vault
  - ACID cigars are a combination of premium, long-filler Nicaraguan tobaccos with these undisclosed exotic ingredients infused into the cigars, providing each blend with a distinctive flavor and aroma unlike anything you have ever experienced

Making a GC project fit a LC

- Are consumer-sensory perceptions important for choosing an analytical technique to use for a given sensory parameter?
  - If our consumers won't happily and frequently buy our products, are we entitled to our paychecks?
  - Are we using our knowledge of analytical chemistry and tobacco science to help improve our products?
  - What if the only instrument available isn't the best choice?
- Historically, most tobacco-flavor problems solved by GC
  - Best tool around, especially if you have headspace and/or similar sampling techniques to concentrate analytes of interest, and don't have to worry about thermal stability of analytes
  - LC not usually the choice for volatile flavors, it can be made to work
  - Screening before sending samples to expensive external laboratory

Getting the flavors off the tobacco

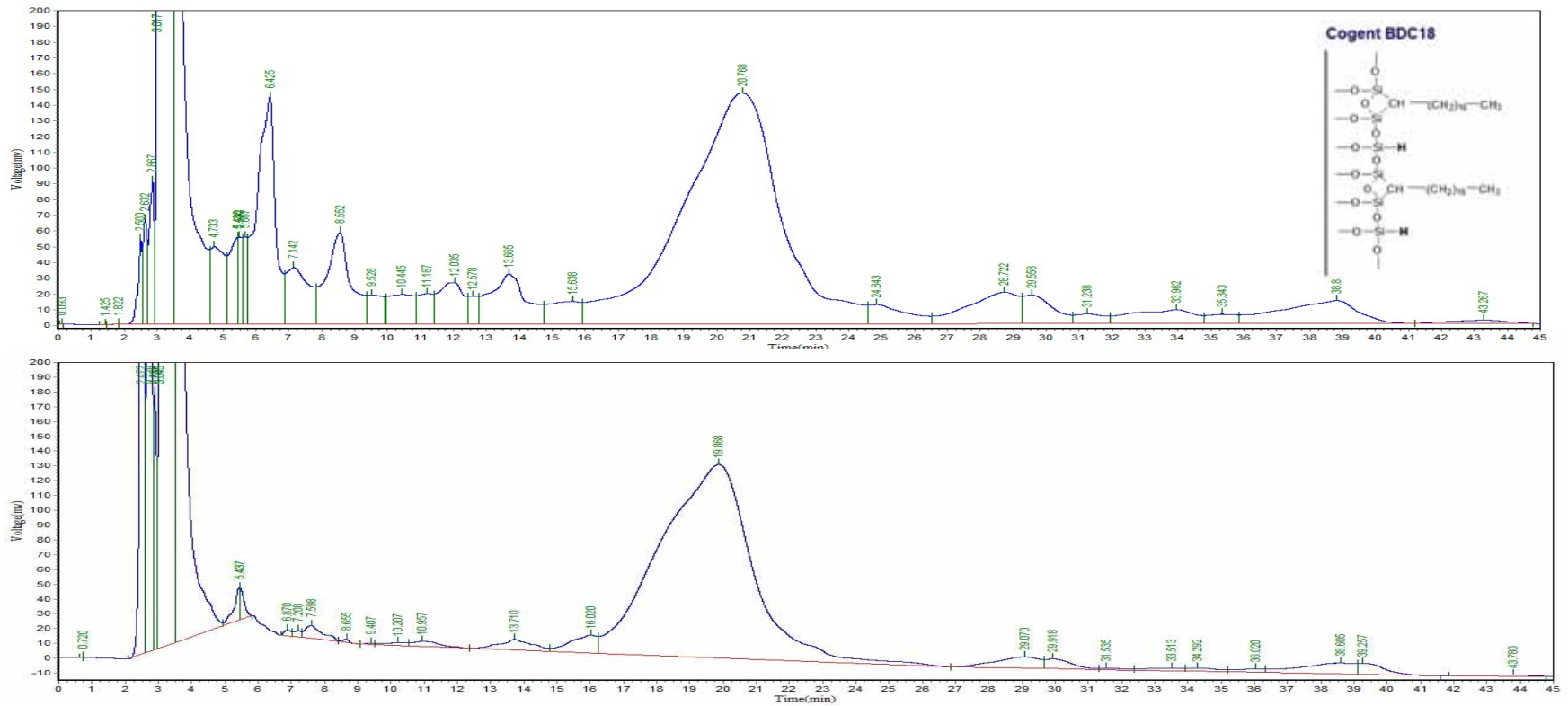
- Graded solvent extraction
  - Looked at hexane, MTBE, DCM, EtOAc, acetone, MeOH, H2O
  - Wrapper, binder, filler, wrapper on butt (sweeteners)
  - Also checked KY RT6, RT8, and other reference tobaccos
  - 1 g tobacco per 20 mL solvent
- Evaluation of extracts
  - Odor after removal of extracting solvent on rotary evaporator
  - HPLC using several different chromatographic conditions
- Final procedures
  - Cut about 1 g of cigar from lit end and extract with 20 mL MTBE at ambient conditions with occasional shaking, then HPLC
  - For sweeteners on butt end, remove wrapper from butt area, wash with H2O and analyze washings by HPLC sugar procedure

HPLC instrumentation and conditions

- Instrumentation (all Waters except as noted)
  - Three 510 pumps, 680 gradient controller, 486 tunable absorbance detector, 410 refractive index detector
  - U6K injector, Rheodyne 7725i injector (10 µL loop) and two Surwit N2000 dual-channel chromatography data systems
- HPLC columns (250 mm X 4.6 mm) and mobile phases used
  - Cogent Type-C silica, Amide, Bidentate C18, Phenyl Hydride
  - Cogent columns used with ACN/H2O and EtOH/H2O;
  - Flow rate was 1 mL/minute
- Screening approach to tobacco extracts
  - Bidentate C18 column with 100% ACN as mobile phase
  - Compare results with KY RT6 flavored cigar filler at several detector wavelengths

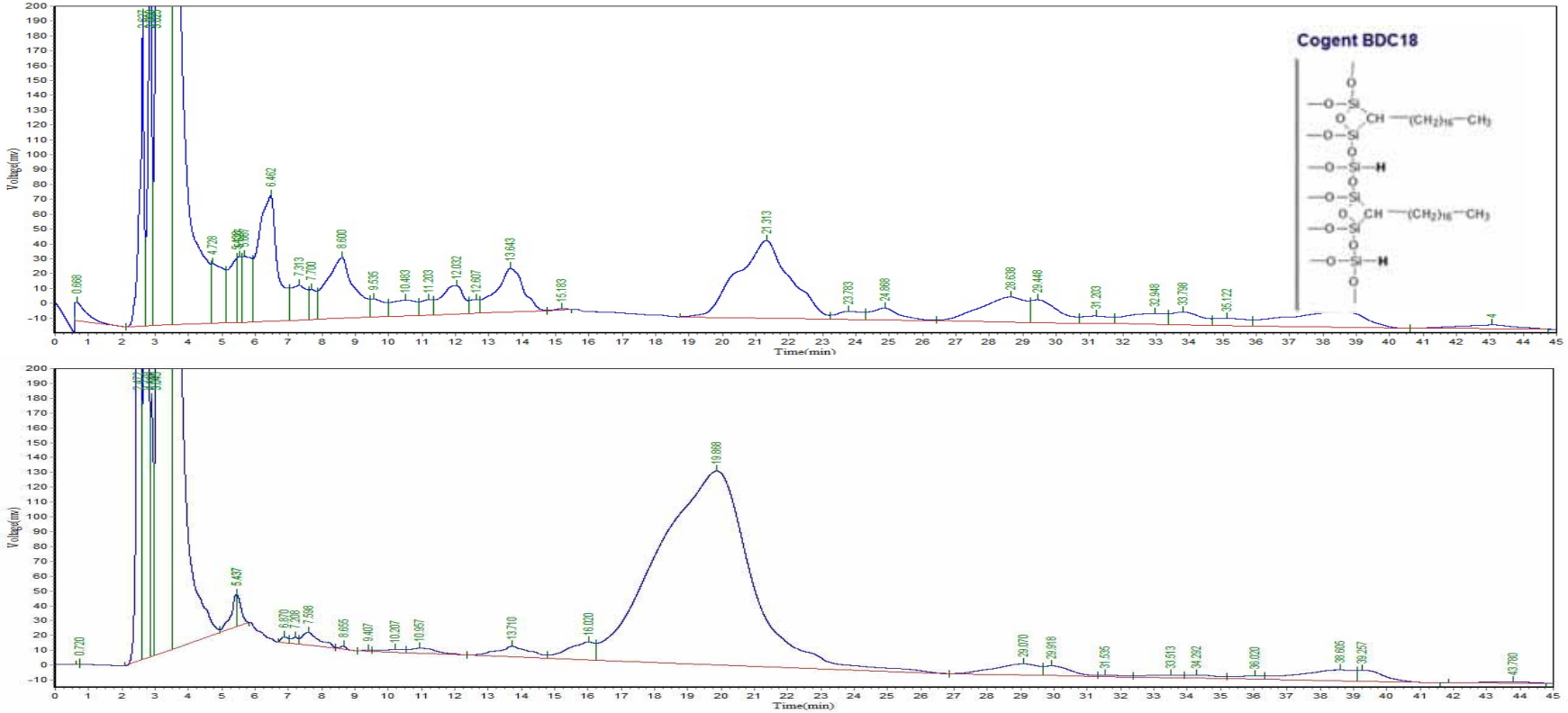
Chromatograms – MTBE extracts Premium vs. RT6

Bidentate C18, 195 nm, 100% ACN



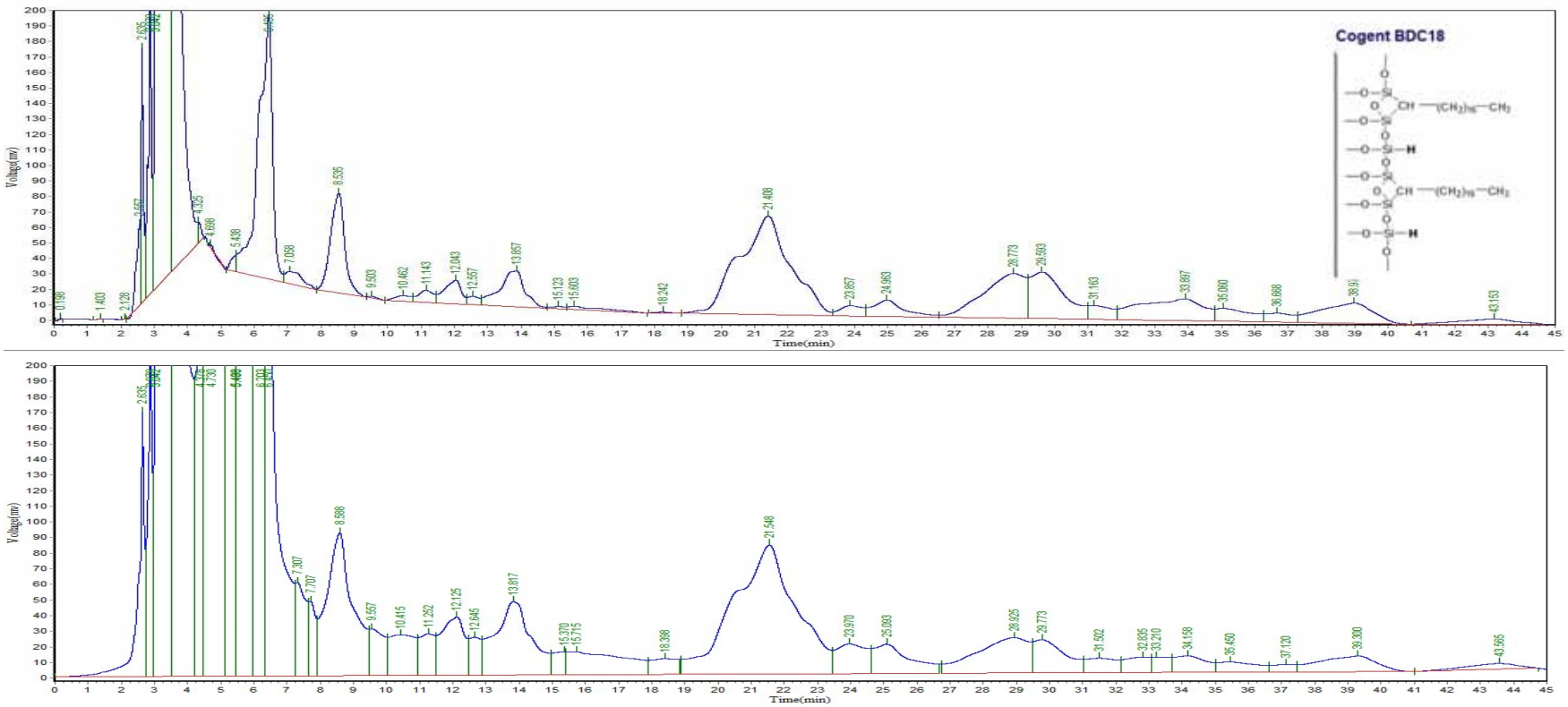
Chromatograms – MTBE extracts Blondie vs. RT6

Bidentate C18, 195 nm, 100% ACN



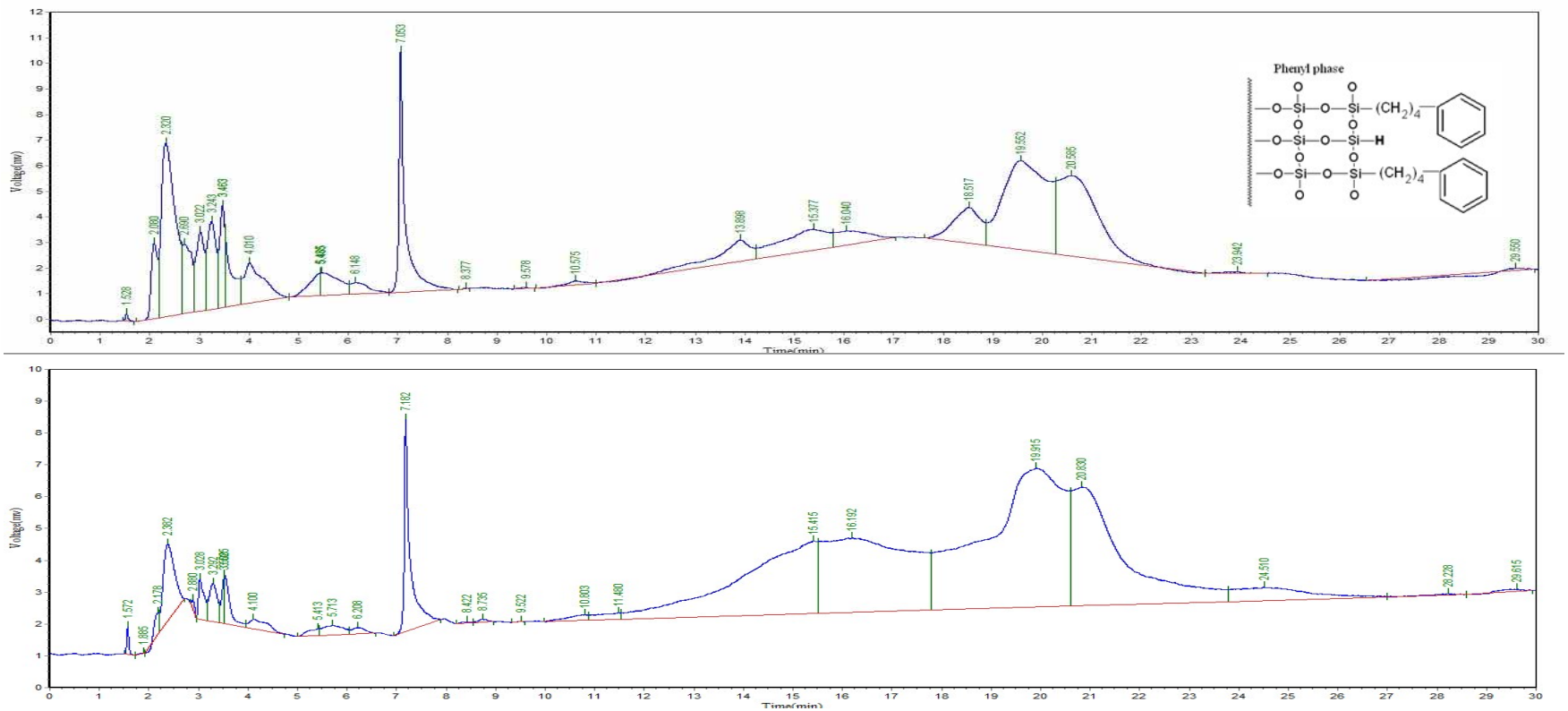
Chromatograms – MTBE extracts Blue / Green Kuba

Bidentate C18, 195 nm, 100% ACN



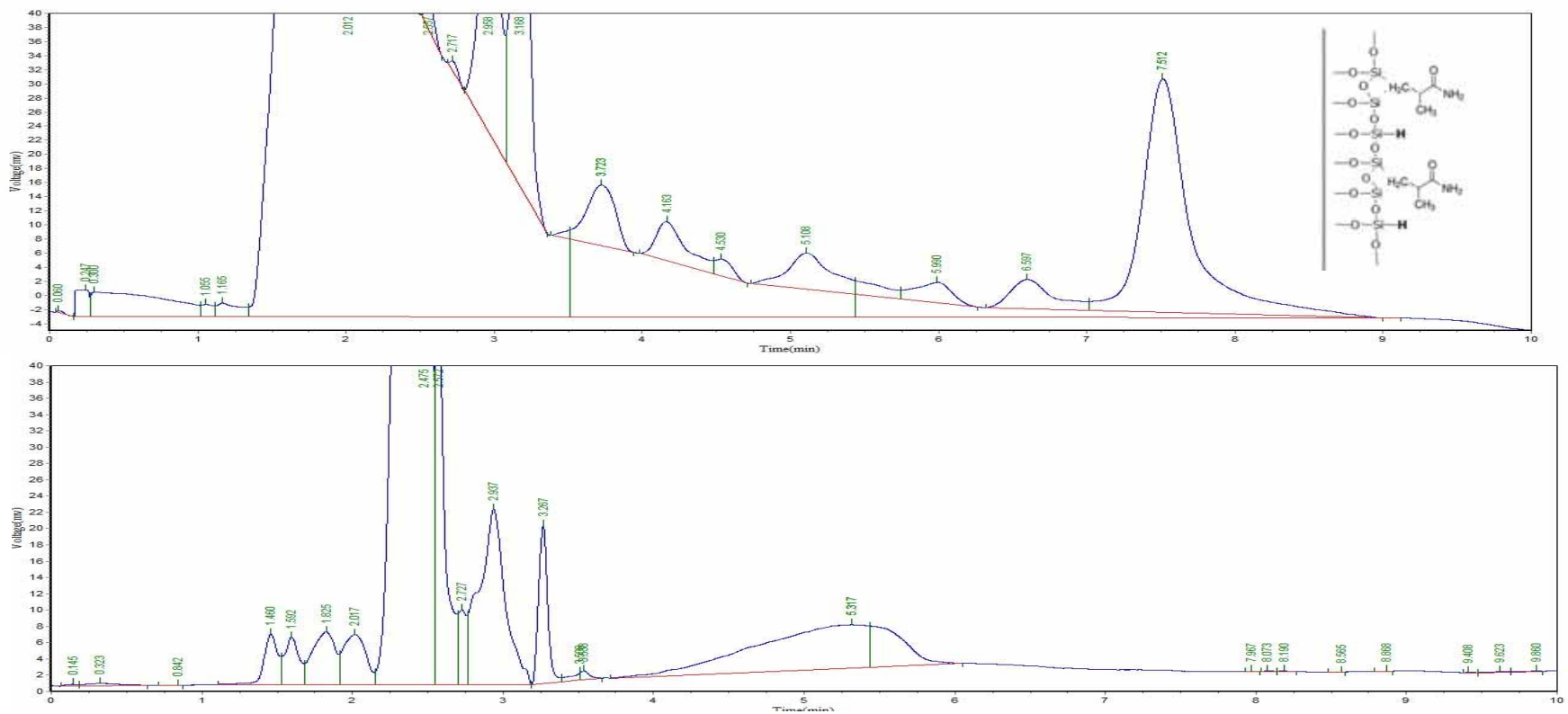
Chromatograms – MTBE extracts Blondie vs Blue Kuba

Phenyl Hydride, 280 nm, 33/67 EtOH/H2O to 62/38 EtOH/H2O ANP



Chromatograms – Blondie butt extract vs Sucralose

Amide 195 nm, 80/20 ACN/H2O



Conclusions

- ACID Cigars
  - Preliminary analytical work indicates differences, but nature an extent of differences need to be determined
  - Next steps are establishing retention times for known cigar flavoants
- Chromatography
  - HPLC with use of several different chromatography conditions (*e.g.*, column, mobile phase, and detector wavelength) can be used to identify differences among products