

ROUTINE AND DETAILED ANALYSES OF SOME TRADITIONAL PIPE TOBACCOS ON THE US MARKET

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Sources of data

- Routine analytical chemistry data were obtained from Alliance One International, Wilson, NC 27893-8414 USA
- GC-MS analyses were obtained from Dr. Alexei Gapeev, Millis Scientific, Baltimore, MD 21228-3930 USA

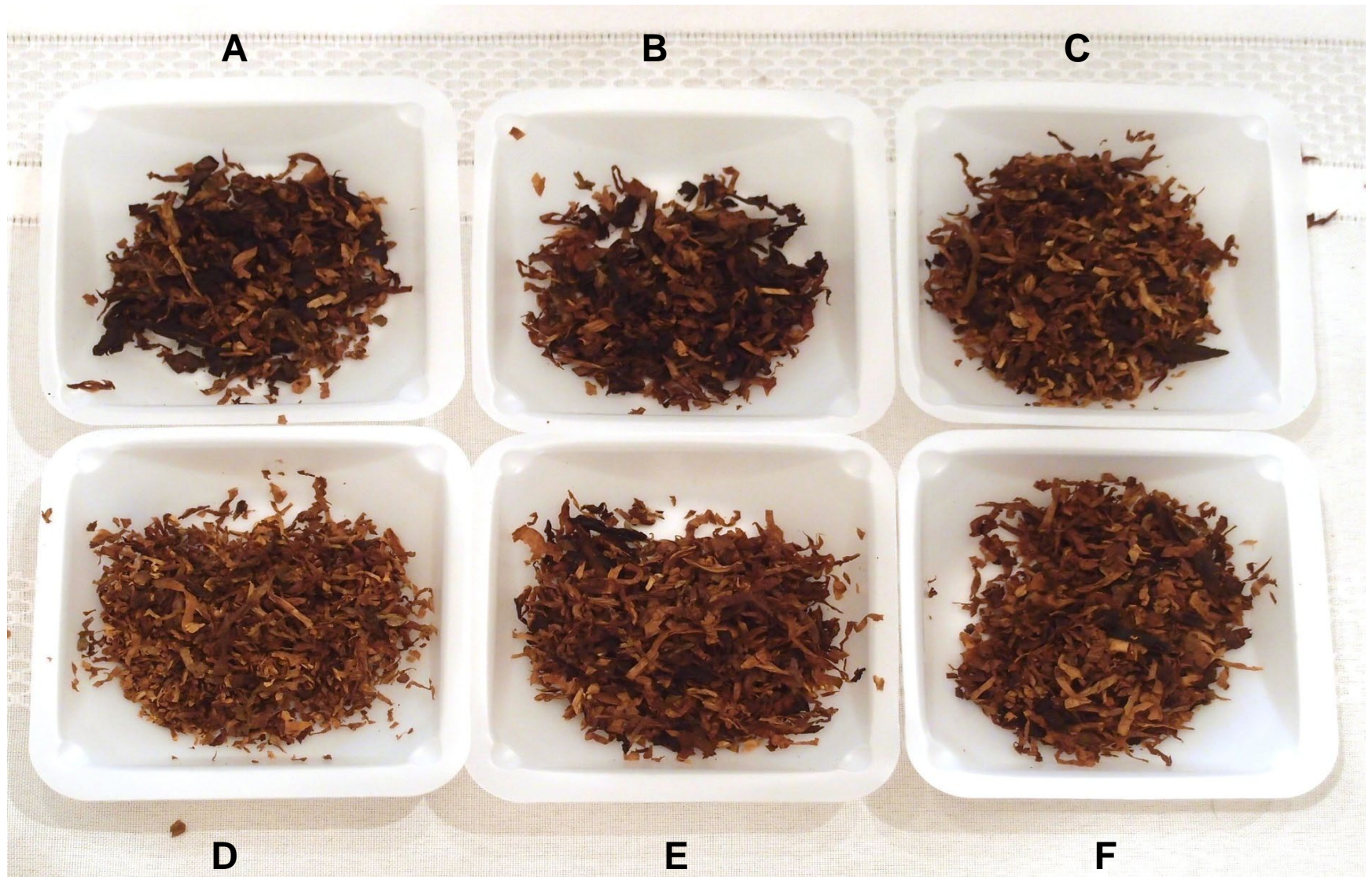
Current situation

- If, and when, FDA Deeming Regulations become effective, pipe tobaccos will likely be included
 - Likely that same rules and grandfather date will apply as for cigarettes
 - Unlike cigarettes and cigars, there is little public information on the chemical properties of pipe tobaccos
- Our objective is to educate regulators
 - Pipe tobacco manufacture
 - Tobaccos used in pipe tobacco blends
 - Commercial pipe tobaccos

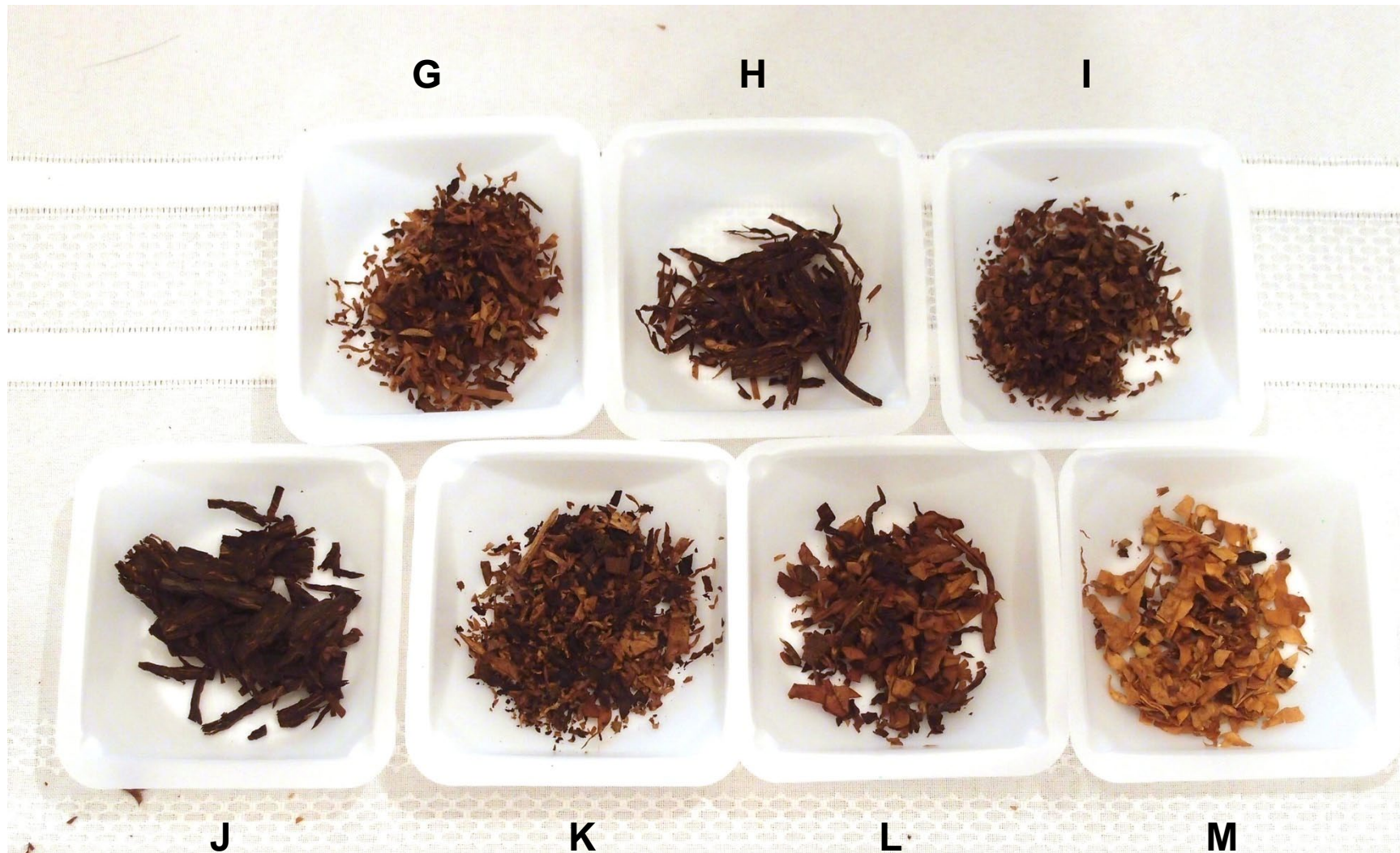
Some pictures follow

- To ensure every one is familiar with what traditional pipe tobaccos look like, the next two slides show pictures of the pipe tobaccos used in this study.
- Please note that traditional pipe tobaccos do not contain expanded tobaccos or reconstituted tobaccos.

Pipe tobacco blends (1)



Pipe tobacco blends (2)



Experimental

- Samples – Tobacco blends were provided by Daughters & Ryan (D&R)
 - D&R provided 13 finished pipe tobacco blends from several manufacturers.
 - D&R also provided 4 samples of tobaccos that had not been manufactured into pipe tobacco
 - Izmir, Samsun
 - Latakia, Perique
- Analytical work included
 - Routine tobacco chemistries,
 - GC-MS scan techniques (work underway)

Descriptive information

Sample	Cut	Blend-type	Blend
A	Coarse	English	Latakia, Oriental/Turkish, Virginia
B	NA	NA	NA
C	Coarse	American	Black Cavendish, Burley, Oriental/Turkish
D	Ribbon	American	Burley, Oriental/Turkish, Perique, Virginia
E	NA	NA	NA
F	NA	NA	NA
G	Ribbon	Aromatic	Black Cavendish, Burley, Virginia
H	Flake	Virginia	Straight Virginia
I	Coarse	Air-cured	Virginia ribbon, Brown Virginia Burley and Perique.
J	Broken flake	Virginia	Straight Virginia
K	Ribbon	Virginia	Virginias, Latakia, Kentucky Fire-Cured, and Orientals
L	Ribbon	Virginia	Virginias, Perique, Kentucky Fire-Cured, and Burley
M	Ribbon	English	Black Cavendish, Latakia

Information obtained from Internet pipe tobacco reviews

NA = Information not available

Quantitative information (%DWB)

Sample	Alkaloids	TSugar	RSugar	Nitrate	Chloride	Oven Volatiles
A	0.83	6.40	5.68	0.58	1.20	9.48
B	1.76	5.68	4.76	0.97	0.86	16.49
C	1.22	7.58	6.28	0.81	0.88	3.71
D	1.52	7.70	6.73	0.92	1.02	5.97
E	2.25	5.63	4.58	1.06	0.88	8.68
F	2.29	5.40	4.36	1.14	0.84	9.79
G	2.10	5.30	4.31	1.10	0.79	8.81
H	2.84	6.59	5.88	0.35	0.46	6.17
I	2.76	7.74	7.50	0.44	0.70	3.67
J	2.05	14.94	14.26	0.26	0.80	6.32
K	1.11	5.40	5.32	0.50	1.45	6.50
L	3.67	6.78	6.42	0.85	1.06	23.79
M	1.64	15.30	14.52	0.58	0.80	10.50

Leaf samples (%DWB)

Sample	Alkaloids	TSugar	RSugar	Nitrate	Chloride	Oven Volatiles
Samsun	0.83	6.40	5.68	0.58	1.20	9.48
Latakia	1.76	5.68	4.76	0.97	0.86	16.49
Izmir	1.22	7.58	6.28	0.81	0.88	3.71
Perique	1.52	7.70	6.73	0.92	1.02	5.97

Pipe Tobacco Manufacture

Example 1

1. Whole leaf
2. Hydrate
3. Stem
4. Cut
5. Case
6. Dry
7. Flavor
8. Tin

Example 2

1. Whole leaf
2. Hydrate
3. Stem
4. Case
5. Dry
6. Flavor
7. Press
8. Slice/flake
9. Tin

Much information on the manufacture of pipe tobaccos can be found at www.pipesmagazine.com. That site also has videos of pipe tobacco manufacturing processes

More detailed analyses (1)

- Processing
 - Pipe tobacco processing often involves steaming and other heating techniques such as stoving (e.g., dry heating).
 - Pressure is also used.
 - It is likely that endogenous tobacco components undergo reaction with other blend components and ingredients.
- Thus, routine analyses used for cigarette tobacco may be not be sufficient for characterizing a pipe tobacco.

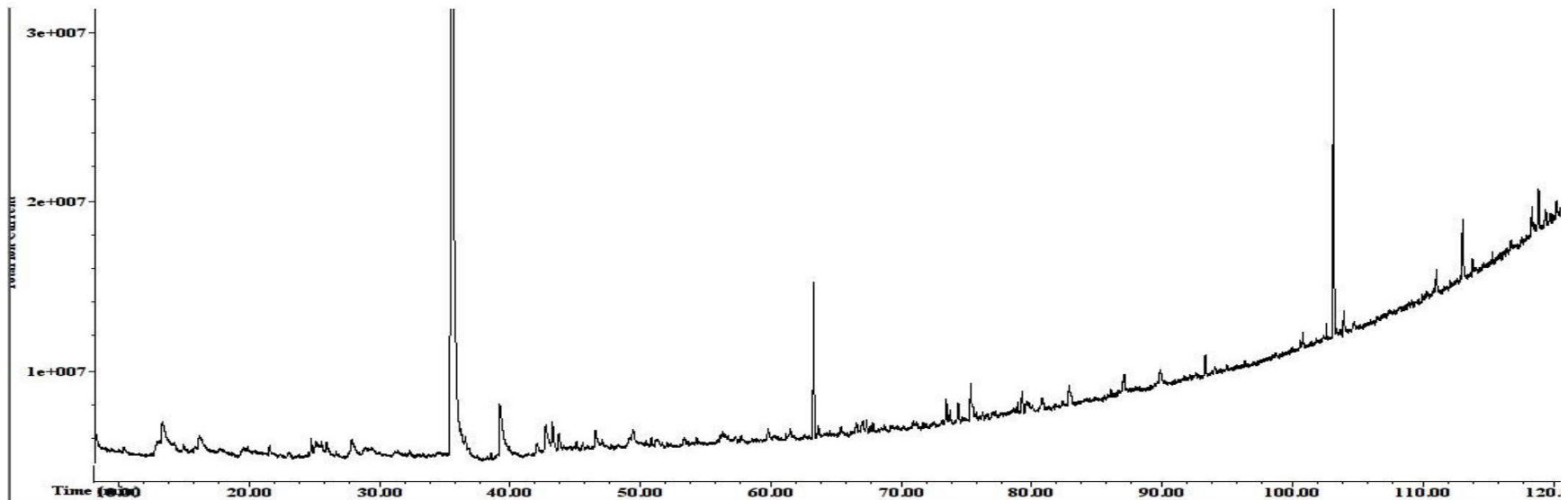
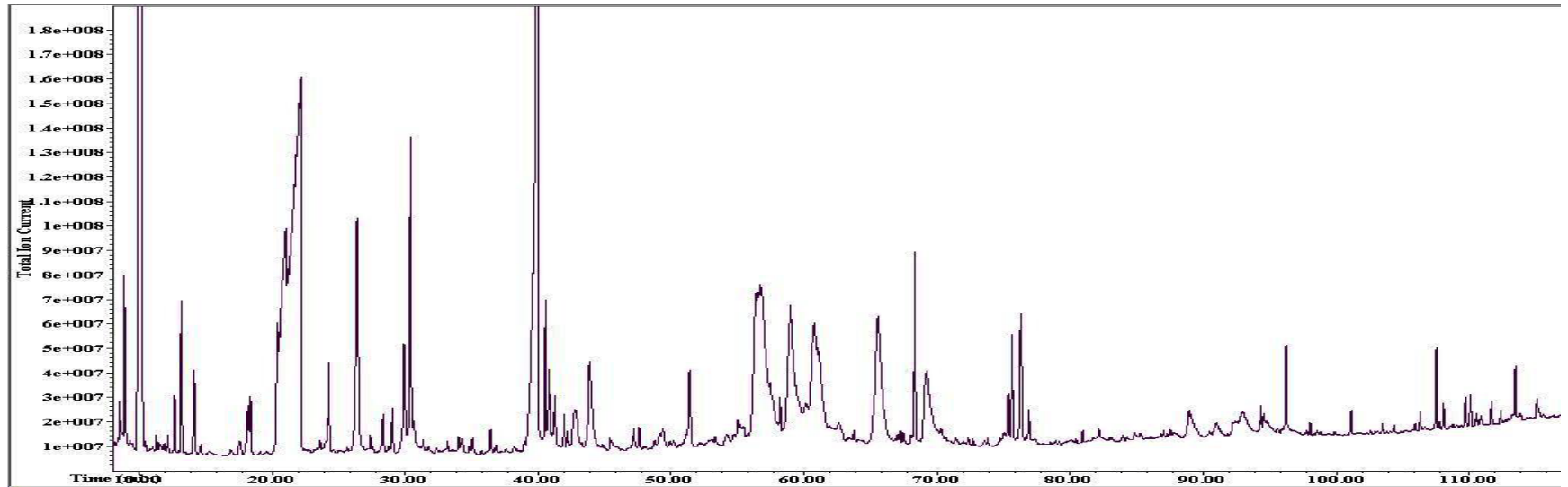
More detailed analyses (2)

- How to get needed information in cost-effective manner?
 - HPHC determinations like not effective
 - Anything involving smoke raises questions about machine smoking of pipes
 - Thus, focus needs to be on tobacco
- One cost-effective way of doing this is use of GC-MS scan techniques
 - Volatiles
 - Semivolatiles
 - Nonvolatiles (derivatized to allow GC-MS)

GC-MS scan techniques

- Two such techniques used in this work
 - DS Scan for sugars, acids, humectants, some flavors, and blend markers (e.g., chlorogenic acid)
 - HFP Scan for many semivolatile flavors and endogenous tobacco components
 - Analyses can be obtained from commercial GC-MS labs at a reasonable cost
- Next slide shows examples applied to a commercial pipe tobacco product

DS and HFP scans



Concluding remarks

- Traditional pipe tobacco will present scientific challenges for both the regulators and the manufacturers
 - Not high volume tobacco products
 - Relatively small number of users
 - Niche products and are made in relative small quantities by small companies
 - Complex chemistry relative to cigarette tobaccos
- The cost of regulation could easily exceed any benefits it could bring