

L. C. Laporte, Esq.

27th April, 1960

such material would also be removed during the moisture determination in the oven. It will, therefore, be incorporated in the 10.7 parts and not the 85.7 parts of dry tobacco, and the result after extraction will be an apparent lowering in moisture content.

We are examining the results we have obtained with air dried and regularly dried tobacco to see whether in this case air dried tobacco is drier.

I mention this to stimulate your thoughts. It may be that we are looking for both a volatile plasticiser and a non-volatile plasticiser, and it can also be true, of course, that removal of either of these upsets the equilibrium water relationship.

Finally, I would appreciate knowing whether you have at any time measured the loss in weight of tobacco substance on drying, remembering, of course, the misleading part played by our oven determination of "moisture" content.

With kindest regards,

Yours sincerely,

C.c. Sir Charles Ellis

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tobacco but, from your description that the amount of extract was 3.6% on the wet basis and 4.2% on the dry basis, I calculated that the unextracted tobacco had a moisture content of 10.7%. This seems perhaps low for equilibrium conditions of 69°F and 60% R.H., but in the absence of further information I will assume that your observation can be expressed in this way:

Tobacco before extraction:	Moisture Content 10.7%
Tobacco after extraction of 3.6% (wet basis):	Moisture Content 11.4%

and I note your proviso that the 3.6% was obtained by evaporation of the solvent in a current of air on a steam bath, and that therefore it might have been greater due to a probable loss of volatile. Nevertheless, I may thus assume that the 3.6% would not have been driven off in the ordinary moisture oven determination. Therefore, we have

Before extraction:

85.7 parts dry tobacco substance
3.6 parts non-volatile extract
10.7 parts "moisture"
<hr/>
100.0

Now, if we may assume for argument's sake that we have not in any way altered the equilibrium association of moisture with dry tobacco substance, we may expect that again, after extraction, we have

85.7 parts dry tobacco substance
10.7 parts "moisture"
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96.4

and the moisture content of this, as determined by oven test, will be

$$\frac{10.7}{96.4} \times 100 = 11.2\%$$

Thus, if removal of the non-volatile extract makes no difference to the way what is left picks up water, we must expect to find that the extracted tobacco is 0.5% higher in moisture content.

However, if there was also a volatile component extracted at the same time with the hexane, we must, I think, suppose that

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HDA/VC/46D

AIRMAIL

27th April, 1960

L. C. Laporte, Esq.,
P.O. Box 6500,
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Dear Leo,

Extracted Tobacco

I have to thank you for your kindness in sending me your report on extraction of tobacco with organic solvents dated January 11th, 1960, and Dr. Miller's memorandum of March 25th on filling capacity of n-hexane extracted tobacco. Boothroyd has already acknowledged your letter of April 1st which accompanied the latter.

I am indeed intrigued by these results and pleased that you find the filling power of extracted tobacco is sufficiently greater to make allowance for the loss of weight and still have the greater filling power than the original tobacco, and I echo Boothroyd's hope that you can get some form of patent cover for this discovery. It could very well be most useful, particularly if in addition to the tar reducing qualities it alters the smoke in a direction we should like.

Can you tell me if you are carrying on with any investigation of the materials extracted, and with any detailed examination of the smoke changes?

With regard to the reason for the increased filling power, I had already thought of the plasticiser angle, which so far fits in with all the experimental knowledge we have of changes in filling power.

I would like to develop further your comment that the extracted tobacco consistently averaged 0.7% higher in moisture content at the same equilibrium conditions. Unfortunately, your letter does not state the moisture content of the unextracted

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