

Comments by W.D.E. Irwin on:-

ROOT TECHNOLOGY

A HANDBOOK FOR LEAF BLENDERS AND PRODUCT DEVELOPERS

The title implies the purpose of the handbook. Comments on its value for the intended purpose are best dealt with by the BTC.

The forward notes that it does not contain detailed chemical information on RT. Neither does it contain referenced evidence for the main RT claims. Therefore it is not possible to evaluate the quality of this evidence. My recent letter to Souza Cruz on their Tech. Memo. MT.99-90, copied to Alan Heard, critiques the quality of one piece of evidence and found that it did not appear to support the three prime claims. My main concern is that the evidence relevant to the main RT claims is not being evaluated critically. I am not saying that RT does not have these benefits but they may be situation specific, hence the need to evaluate when, and when not, the benefits are found.

Ammonia as an impact booster (page 18)

Any increase in smoke pH, caused by any means, including ammonia addition, will increase the proportion of smoke nicotine in free base form. I think this is not in doubt. There is very little "free" nicotine in flue-cured (FC) smoke. FC smoke nicotine does give impact. Therefore, I think "bound" nicotine gives impact. I think the evidence for an increase in impact with increasing proportions of "free" nicotine (= higher pH) is fairly sound. However, I think there is also evidence of increasing irritation at higher pH. Irritation and impact can be confused and I think we should be sure that this is not occurring in RT situations. I suspect at least two sources of irritation, higher pH (increased by ammonia) and other irritants which are reduced by ammonia. A key reason for this view is the increase in impact, irritation, smoke nicotine and pH caused by sodium carbonate addition to filters. Rob Ferris could be consulted on the above. I think there are loose ends here.

Ammonia as flavor promoter (page 19)

Nicotine is now described as a "flavor" compound. It is also stated that more nicotine is delivered to the smoke. More "free" nicotine, yes, but a check should be made if, and in what situations, this is true for nicotine as a whole. see my Souza Cruz letter. The handbook extrapolates from one "flavor" compound, nicotine, to stating that other flavor compounds are transferred more efficiently. But on page 1 it is stated that nonvolatile flavor precursors are produced. The flavors are produced during smoking. It would be better to state that more smoke flavor is due to more precursors rather than better transfer. Transfer probably remains unchanged. The next section on ammonia as a tobacco taste enhancer reverts to the explanation I prefer.

ANSIRO (page 25 et seq.)

On page 26 it is stated that ANSIRO in combination with ammonium tartrate (1.35% on final blend) decreases irritation. This looks like information drawn from Souza Cruz MT.99-90. My letter to SC queries this conclusion because it is not supported by the OMEGA data. Hence, I can not assume that other claims made in the Handbook, where I have not had access to sources, are valid.

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Tables 1 and 2 (page 27)

There is insufficient information to evaluate the claims based on the data, for example blend nictines and cigarette design. On page 22 it is stated that the 22% nicotine transfer from 100% CPCL (Table 1) is unusually high against normal values of 12-15%. I would want to know that the same designs were used, eg paper permeability. Also, B&W have more than one method of calculating transfer, confirmed by R.R. Johnson. They also overlook the very high tar value relative to nicotine. There is evidence that a given amount of tobacco nicotine can be eluted or transfered more efficiently as the amount of aerosol to "carry" it increases. Hence more loose ends are indicated.

In Table 2 increasing CPCL level has increased nicotine transfer. However, puff number has increased also, though by a smaller percentage. However, Nicotine / tar ratio has not changed. This suggests that, for a cigarette designed to give some target tar delivery, a greater proportion of CPCL would not give more smoke nicotine. I would want to see blend nicotine results for a full evaluation of this table.

Conclusion

The above observations confirm my concern about the need for critical evaluation of evidence for RT claims. They also indicate where some of the major loose ends may lie.

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