T92-0045: Interlaboratory quality control on Tpot measurements.

P.A. Coucke on behalf of the members of NCI T92-0045 collaborative group (*).

Materials and methods:
We will report on the intercomparison which contains two arms: a single set of data (first analysis), stained, processed and analysed in Lab1 has subsequently been analyzed by the team in the Lab 2 and in Lab 3. This kind of comparison reveals differences in interpretation and region setting. Pieces of the original tumor specimen have been processed, stained and analyzed separately in each centre (mean analysis). This latter reveals variation in dissociation, staining and running the sample, but also illustrates tumor heterogeneity. All three laboratories are equipped with a Becton Dickinson FACSscan and are using PC-Lysis for analysis. The procedure for handling the sample has been standardized before starting the comparison; guidelines were elaborated for setting the gates. The mathematical algorithm modified from A. Begg has been used. The study consists of 102 specimens from 97 patients with following breakdown: 25 gynecological, 36 head and neck, 35 rectal and 6 pulmonary cancers. In order to compare Tpot-data the method of Bland and Altman has been used which yields limits of agreement. This method gives a better impression on the true correlation between centers as compared to the correlation coefficients. Moreover, it results in a closer estimate of the variation on an individual specimen. The analysis has been done on the 102 specimens but a second analysis has been performed on 89 biopsies, after having excluded outliers, with obvious aberrant values.

Results:
The Bland and Altman analysis of log Tpot for all 102 samples yields small mean differences (range of logdata 0.004 to 0.151), but large standard deviations (range 0.285 to 0.407 in logdata). Converting the logdata to days yields a mean difference of 1 day and a standard deviation ranging from 1.9 to 2.6 days. Restricting the analysis to 89 samples (excluding obvious aberrant outliers), improves the standard deviation to a range of 0.161 - 0.326. This results in a standard deviation of 1.45 - 2.1 days. This improvement is only observed for disc data and not for meat data.

Conclusions:
Comparison on disc yields good agreement after removal of a few obviously aberrant results. The lack of improvement for meat data after having removed aberrant results might reflect tumor heterogeneity.