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CORRELATION BETWEEN THE YIELD OF PRODUCED [18F]FDG AND THE ACTIVITY RETAINED DURING SYNTHESIS

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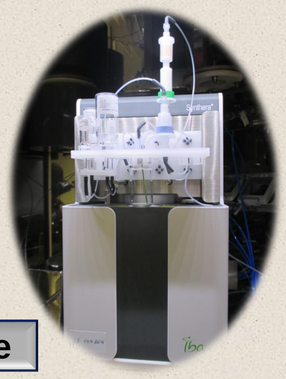
Background

UI PET

GE PET Trace 800

FDG Laboratory

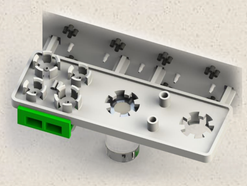


IBA Synthera Module

Clio Volumetric Dispenser

Materials & Methods

63 batches [18F]FDG



ABX IFP cassettes and reagents kits.

Waters Sep-Pak cartridges (QMA, Alumina B, C18) and SPure SCX cartridge.

Radiochemical purity: Raytest miniGITA TLC scanner.

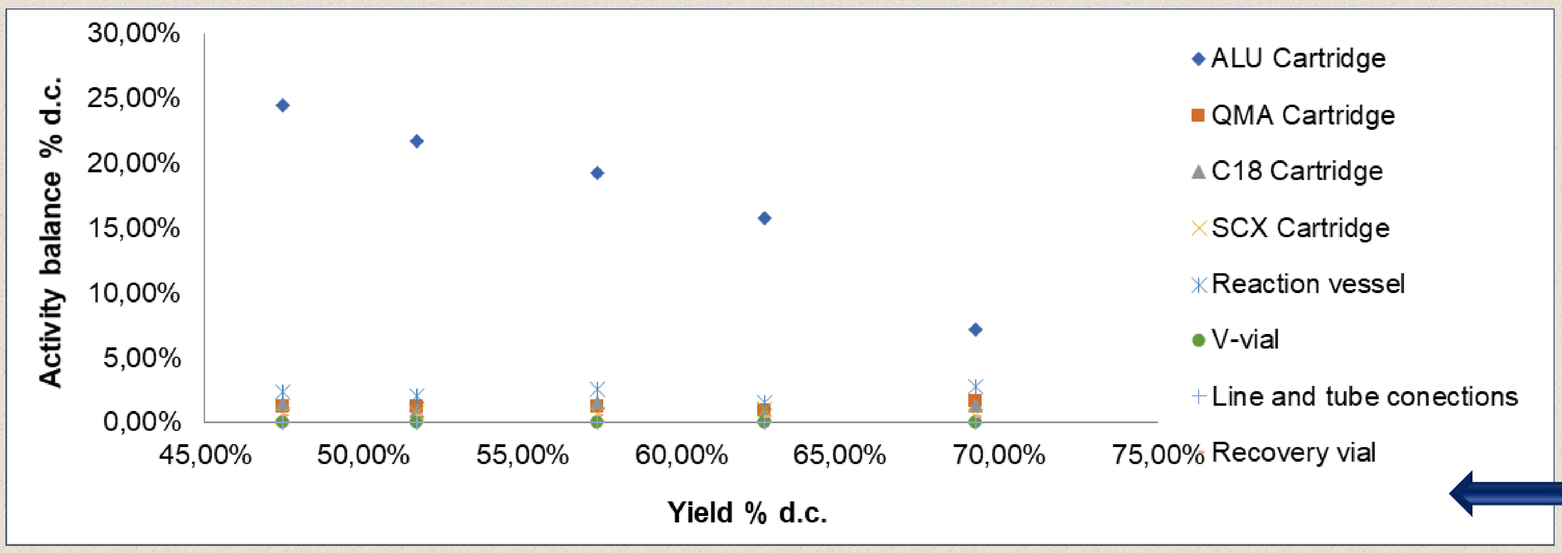
Retained radioactivity: Biodex Atomlab 500 Dose Calibrator.

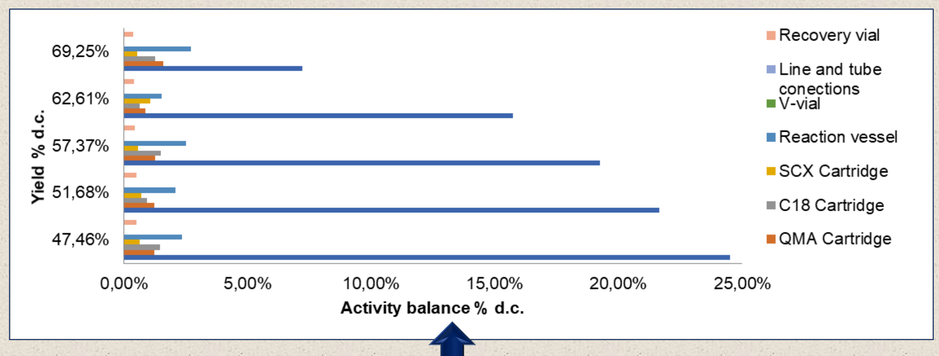
Results & Discussion

Yield d.c.	Yield average d.c.	QMA Cartridge	ALU Cartridge	C18 Cartridge	SCX Cartridge	Reaction vessel	V-vial	Line and tube conections	Recovery vial
45-50 %	47,46%	1,25%	24,51%	1,46%	0,66%	2,36%	0,02%	0,00%	0,52%
50-55 %	51,68%	1,24%	21,67%	0,94%	0,71%	2,09%	0,01%	0,00%	0,51%
55-60 %	57,37%	1,27%	19,24%	1,49%	0,60%	2,52%	0,01%	0,00%	0,47%
60-65 %	62,61%	0,89%	15,74%	0,64%	1,08%	1,55%	0,02%	0,00%	0,42%
65-70 %	69,25%	1,61%	7,22%	1,29%	0,55%	2,73%	0,01%	0,00%	0,38%

Radiochemical purity show that the [18F]FDG content is more than 99% of the total radioactivity, in all of the batches.

One-way analysis of variance shows that there is no statistically significant correlation between the yield variability and the activity retained on the C18, QMA, SCX cartridges, tubes, reaction vessel, v-vial and recovery vial ($p>0.05$, for all seven correlations).





The regression analysis of the activity retained on the alumina cartridge indicates negative linear regression.

Conclusion

In our automated [18F]FDG synthesis process, there is statistically significant correlation only between the [18F]FDG yield and the amount of radioactivity retained on the alumina cartridge, which adsorbs the unreacted [18F] fluoride.