Supplemental Materials

Comparative Study of [^{18}F]AlF-NOTA-FAPI-RGD and [^{18}F]FDG/[^{18}F]AlF-NOTA-FAPI-04 PET/CT in Renal Cell Carcinoma

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Additional Materials and Methods

The process of radiosynthesis for [^{18}F]AlF-LNC1007

The automated synthesis of [^{18}F]AlF-LN1007 was performed using an AllInOne synthesis module (Trasis, Ans, Belgium). Initially, [^{18}F]fluoride was generated and subsequently purified through a Sep-Pak light QMA cartridge (Waters). The retained [^{18}F]fluoride was then eluted using 400 μL saline into the reaction vessel. A reaction mixture was prepared by combining LNC1007 (200 μg dissolved in 700 μL DMSO), aluminum chloride solution (20 μL of 0.2 mM in 0.5 M sodium acetate buffer, pH 4.0), and sodium acetate solution (300 μL of 0.5 M, pH 4.0). This mixture underwent thermal treatment at 100°C for 20 minutes followed by controlled cooling to 40°C.

For purification, the cooled mixture was diluted with deionized water and loaded onto an HLB cartridge (30 mg, Waters). The cartridge underwent three washing cycles with deionized water to eliminate unbound [^{18}F]fluoride. The purified product was collected by elution with 2 mL of 50% ethanol, further diluted with 10 mL saline, and filtered through a 0.22 μm sterile membrane into a sterile container. Quality control analysis was conducted via radio-HPLC, using a mobile phase system containing 0.1% trifluoroacetic acid (TFA) in acetonitrile (solvent A) and 0.1% TFA in water (solvent B). A gradient elution profile was applied: 10–60% solvent A over 15 minutes.

Supplementary Table 1. Information of the 4 non-RCC patients

Patient			Pathological diagnosis	FAPI-RGD		FDG		FAPI	
No.	Gender	Age		SUV_{max}	TBR	SUV_{max}	TBR	SUV_{max}	TBR
1	F	60	Angiomyolipoma	5.65	1.59	/	/	5.87	4.48
2	F	59	Inflammation	14.68	6.74	10.87	4.01	/	/
3	F	50	Renal Oncocytoma	5.25	1.45	2.61	1.10	/	/
4	M	63	Granuloma	2.38	0.78	3.57	1.94	/	/