**Table S1.** Repeatability results for (a) [68Ga]GaFAPI-46 and (b) [natGa]GaFAPI-46.

(a)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Injection** | **Acitvity (MBq/mL)** | **Inj. Time** | **Δt (min)** | **Corrected Activity** | **Peak Area** | **RF 1** |
| [68Ga]GaFAPI-46 | 46,88 | 20:48 | 96 | 0,3524 | 89014,3 | 252595,5 |
| [68Ga]GaFAPI-46 | 21:05 | 113 | 0,2963 | 78107,2 | 263581,1 |
| [68Ga]GaFAPI-46 | 21:21 | 129 | 0,2517 | 69723,4 | 276969,8 |
| [68Ga]GaFAPI-46 | 21:37 | 145 | 0,2139 | 55882,1 | 261310,9 |
| [68Ga]GaFAPI-46 | 21:54 | 162 | 0,1795 | 43717,5 | 243106,8 |
| [68Ga]GaFAPI-46 | 22:11 | 179 | 0,1512 | 41455,1 | 274143,3 |
| **%RSD** | **4,89** |

(b)

|  |  |
| --- | --- |
| **Injection** | **Area** |
| [natGa]GaFAPI-46 | 97,59 |
| [natGa]GaFAPI-46 | 104,38 |
| [natGa]GaFAPI-46 | 101,67 |
| [natGa]GaFAPI-46 | 103,79 |
| [natGa]GaFAPI-46 | 106,10 |
| [natGa]GaFAPI-46 | 107,52 |
| **%RSD** | **3,40** |

1 $RF=\frac{Peak area}{Radioactivity injection time}$

|  |  |
| --- | --- |
| **Injection** | **Area of [68Ga]GaFAPI-46 (%)** |
| [68Ga]GaFAPI-46 | 99.94 |
| [68Ga]GaFAPI-46 | 99.91 |
| [68Ga]GaFAPI-46 | 99.78 |
| [68Ga]GaFAPI-46 | 99.88 |
| [68Ga]GaFAPI-46 | 99.94 |
| [68Ga]GaFAPI-46 | 99.63 |
| **%RSD** | **0.12** |

**Table S2.** Repeatability results of radioTLC method for [68Ga]GaFAPI-46.

**Table S3.** Repeatability results of radioTLC method for ethanol content in [68Ga]GaFAPI-46.

|  |  |
| --- | --- |
| **Injection** | **Area of [68Ga]GaFAPI-46 (%)** |
| [68Ga]GaFAPI-46 | 2491.00 |
| [68Ga]GaFAPI-46 | 2341.50 |
| [68Ga]GaFAPI-46 | 2529.10 |
| [68Ga]GaFAPI-46 | 2589.40 |
| [68Ga]GaFAPI-46 | 2594.40 |
| [68Ga]GaFAPI-46 | 2589.30 |
| **%RSD** | **3.88** |

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**Figure S1.** Representative HPLC chromatograms of each solution: (a) [68Ga]GaCl3, (b) [natGa]GaFAPI-46, and (c) [68Ga]GaFAPI-46.

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**Figure S2.** Representative radioTLC chromatograms of each solution: (a) [68Ga]GaCl3 and (b) [68Ga]GaFAPI-46.

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**Figure S3.** LOQ Representative chromatograms of HPLC, TLC and GC methods.

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**Figure S4.** Linearity plot of (a) HPLC, (B) TLC and (C) GC methods.