

Reviewer 2

More validation data are required to validate the cold complex formation. Metallic impurities need to be quantified and presented in the extra information.

LC-MS was used to identify the obtained metal conjugates and check for compound purity (Supplementary material, Table S1). Assessment of uncoordinated lutetium-175 and gallium was done by SEC-ICP-MS.

Also, *in vitro* studies are required to check the integrity of the cold complexes. It would be nice if some comparison will be made with the corresponding radiolabeled complexes.

Integrity of the cold complexes was confirmed by conventional SEC and by LC-MS.

We did not directly compare the ICP-MS methodology to radio-HPLC, since the radioanalytical part is well described in literature as referenced in the manuscript and the supplementary material.

The results obtained for the *in vitro* serum stability assays of the metal-labeled peptidomimetics were compared to those of the corresponding radiopharmaceuticals [^{175}Lu]Lu-PSMA-617 and [^{68}Ga]Ga-PSMA-11, which was mentioned in the main article in the discussion section (p. 11: “The stabilities measured for the non-radioactive [^{175}Lu]Lu-PSMA-617 and [$^{\text{nat}}\text{Ga}$]Ga-PSMA-11 was equal to the stabilities reported in literature for the radioactive [^{177}Lu]Lu-PSMA-617 and [^{68}Ga]Ga-PSMA-11). The values are reported in the supplementary materials (S5. *In vitro* serum stability of [^{175}Lu]Lu-PSMA-617 and [$^{\text{nat}}\text{Ga}$]Ga-PSMA-11).

For the metal-labeled biologics conjugates we decided to use metal-chelator complexes and conjugation chemistries in literature well described stability profiles. The sortase-catalyzed ligation which results in the formation of a stable linkage compared to maleimide chemistry that is known to form a thiosuccinimide linkage – a Michael acceptor – that is hydrolytically unstable.