Supporting information

**Theranostic Radioiodine Labeled Melanin Nanoparticles**

**Inspired by Clinical Brachytherapy Seeds**

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**Keywords:** melanin, theranostic, radioiodine, labeling, I-131
Figure S1. (a) Dry powder of MNP, MNP-I and MNP-Ag-I and. (b) Solution of MNP, MNP-I and MNP-Ag-I.

Figure S2. MNP, MNP-I and MNP-Ag-I incubation with PBS for 0 h (a), 24 h (b) and 48 h (c). MNP, MNP-I and MNP-Ag-I incubation with serum for 0 h (d), 24 h (e) and 48 h (f).
Figure S3. UV–vis–NIR spectra of MNP, MNP-I and MNP-Ag-I incubation with PBS for 0 h (a), 24 h (b) and 48 h (c). UV–vis–NIR spectra of MNP, MNP-I and MNP-Ag-I incubation with serum for 0 h (a), 24 h (b) and 48 h (c).
Figure S4. HE staining of the sections of main organs including heart, liver, spleen, lung and kidney in MNP-Ag-\(^{131}\text{I}\), \(^{131}\text{I}\) and control groups after treatment.

Table S1. Atomic percentage of MNP, MNP-Ag-I determined by XPS survey.

<table>
<thead>
<tr>
<th>Element</th>
<th>C</th>
<th>O</th>
<th>N</th>
<th>Ag</th>
<th>I</th>
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<tr>
<td>MNP</td>
<td>74.31</td>
<td>19.76</td>
<td>4.6</td>
<td>0.07</td>
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<tr>
<td>MNP-Ag-I</td>
<td>73.02</td>
<td>18.48</td>
<td>4.38</td>
<td>2.03</td>
<td>2.08</td>
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