

**S3 Fig. Typical semi-preparative HPLC chromatogram of crude [Nle<sup>14</sup>,<sup>124</sup>I-Tyr<sup>40</sup>-NH<sub>2</sub>]Ex-4.** UV- and radio-detectors were in series, with the radio-detector preceding the UV-detector. Numbers in the chromatograms refer to peak retention time in minutes. The product peak was collected in several fractions (based on the radio-trace and before entering the UV-detector), and fractions containing the pure product (as determined by analytical HPLC analysis of individual fractions) were pooled, trapped on a C8-SepPak and formulated in EtOH. Note that the peptide precursor [Nle<sup>14</sup>,Tyr<sup>40</sup>-NH<sub>2</sub>]Ex-4 elutes about 3 min earlier than the iodinated product [Nle<sup>14</sup>,<sup>124</sup>I-Tyr<sup>40</sup>-NH<sub>2</sub>]Ex-4, enabling isolation of the pure radio-iodinated tracer in high specific activity.

