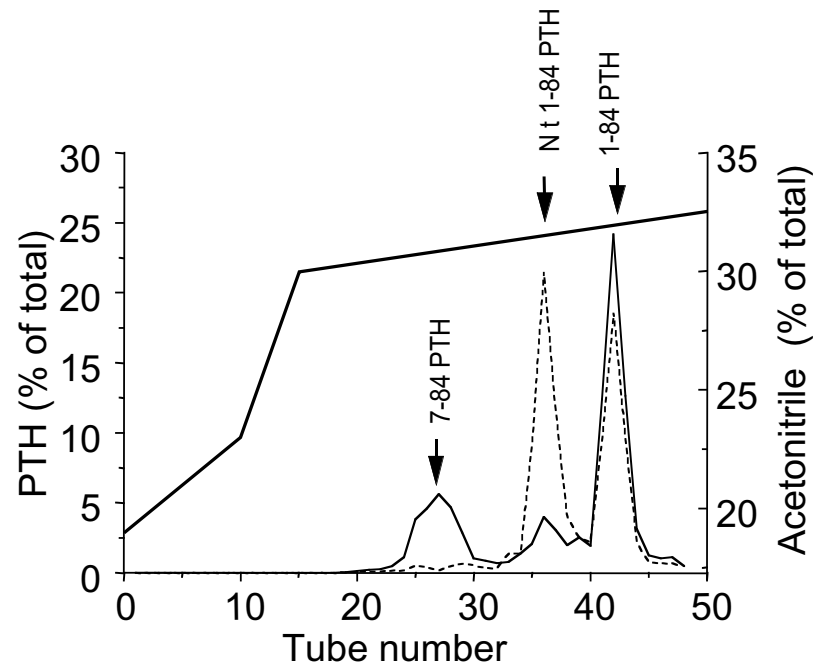


Non-Typical 1-84 PTH (nt1-84 PTH) Found in a Patient with Parathyroid Cancer

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The intact PTH assay measures both 1-84 PTH and 7-84 PTH. 7-84 PTH exerts strong biological actions inverse to 1-84 PTH. The Scantibodies CAP or whole PTH assay uses an antibody that only binds PTH if the first amino acid is present, making it specific for 1-84 PTH. Since the Total PTH (tPTH) assay detects 1-84 PTH and 7-84 PTH, levels of tPTH are generally higher than CAP levels. However, in rare cases, a CAP level is higher than tPTH level. We observed in the most severely diseased 3 out of 5 patients with parathyroid carcinoma (PTCa) treated with the calcimimetic (S Ca 17.3 ± 2 mg/dL), Sensipar that CAP (1047 ± 154 pg/ml) was 1.4 times higher than tPTH (755 ± 64 pg/ml). The 1-84 PTH/7-84 PTH ratio did not change in any of the 5 patients over more than 12 months of treatment with Cinacalcet. Resolution of PTH by HPLC revealed a 3rd previously unidentified form (peak) of PTH that was detected by the CAP assay (meaning that it possesses all 84 amino acids), but not detected by the tPTH assay (hence the CAP value was higher than the tPTH value). This non typical 1-84 PTH (nt1-84 PTH) is less hydrophobic migrating in front of the 1-84 PTH peak. Post translational modification in sites of 1-84 PTH that would alter detectability by the tPTH assay are consistent with these findings. More information about this variant of 1-84 PTH including its structure, biological activity, source, and regulation will give new insights into the biochemistry and actions of PTH.



Sample loaded: 9 ml on Agilent HPLC. CAP (- - -) = whole PTH = 1-84 PTH assay value = 1374 pg/ml. Total PTH (—) = 1-84 PTH + 7-84 PTH assay value = 1541 pg/ml.

Cantor T, D'Amour P, Rubin M, Silverberg S, Bilezikian J. Non-Typical 1-84 PTH (nt1-84 PTH) Found in a Patient with Parathyroid Cancer. *J Am Soc Nephrol* 2004; 15(10):F-PO1002, p. 284A.