

Similarities and Differences Between the 1-84 PTH Specific Assays: Scantibodies CAP Assay vs the Nichols Bio-Intact PTH Assay

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In 1998 D'Amour et al. demonstrated by HPLC that current intact PTH assays measure 7-84 PTH as well as 1-84 PTH. 7-84 PTH has been demonstrated to be an agonist with inverse biological activities to 1-84 PTH (hypocalcemic agent depressing bone turnover/formation, osteoclast formation and bone resorption). Therefore, it was desirable to not measure the sum of 1-84 PTH and 7-84 PTH (intact PTH assay), but to measure 1-84 PTH exclusively. In 1998 the first whole PTH assay was developed (Scantibodies CAP assay). In 2001 the second 1-84 PTH was developed (Nichols Bioactive or Bio-Intact assay). Both the CAP, Bio-Intact and intact PTH assays use capture antibodies directed to the 39-84 PTH region of the 1-84 PTH molecule. The CAP assay does not react with 2-34, 3-34, 4-34 and 5-34 PTH, however, the following data shows that the Bio-Intact PTH assay has cross reactivity with 2-34 and 3-34 PTH and to a lesser degree with 4-34 and 5-34 PTH. 18 EDTA plasma samples were measured by both the Scantibodies CAP assay and the Nichols Bio-Intact assay and the data is shown below. It is essential that each assay be validated with bone histology for prediction of bone turnover.

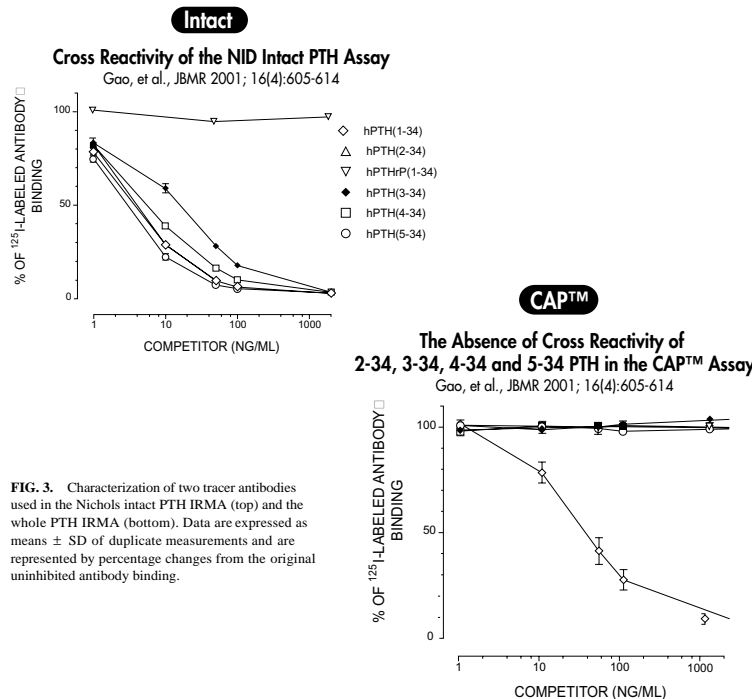


FIG. 3. Characterization of two tracer antibodies used in the Nichols intact PTH IRMA (top) and the whole PTH IRMA (bottom). Data are expressed as means \pm SD of duplicate measurements and are represented by percentage changes from the original uninhibited antibody binding.

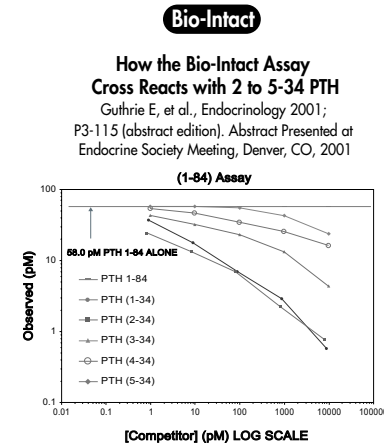


Figure 4. Further characterization of specificity: □ Peptides with PTH (1-34), (2-34), (3-34), (4-34), and (5-34) were tested in the assay □ with a baseline concentration of PTH (1-84) □ at 58 pM. Peptides without the amino acids □ one and two have minimal interference.

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