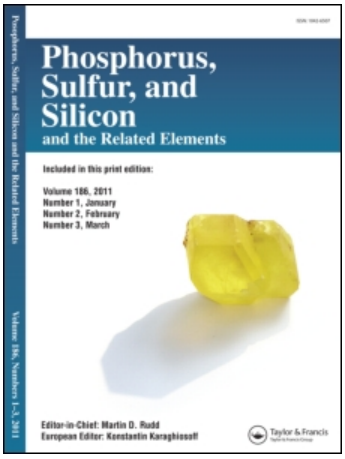

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Synthesis of Dithio-Diphosphine (P_2S_2COOH)-Based Bifunctional Chelating Agent. Its Coupling Reactions with Peptide Analogs and Steroids

Hariprasad Gali[a]; Srinivasa R. Karra[a]; Sreenivasa V. Reedy[a]; Roger Schilbli[a]; Wynn A. Volkert[a]; Kattesh V. Katti[a]
[a] Center for Radiological Research, University of Missouri-Columbia, Columbia, MO, USA

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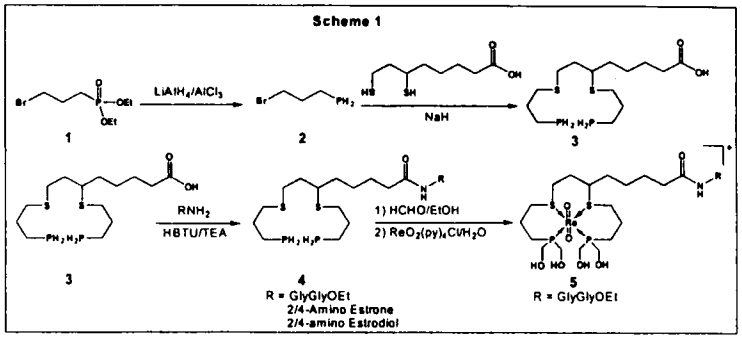
Synthesis of Dithio-Diphosphine (P_2S_2COOH)-Based Bifunctional Chelating Agent. Its Coupling Reactions with Peptide Analogs and Steroids

HARIPRASAD GALI, SRINIVASA R. KARRA, SREENIVASA V. REDDY, ROGER SCHIBLI, WYNN A. VOLKERT and KATTESH V. KATTI

Center for Radiological Research, Allton Building Rm. #106 University of Missouri-Columbia, Columbia, MO 65211, USA.

Bifunctional chelating agents are important in the development of site-specific radiopharmaceuticals for diagnosis and therapy of cancer. Recently, our laboratory has developed a new dithio-diphosphine (P_2S_2COOH)-based bifunctional chelating agent [1]. Its coupling to biologically important molecules such as peptide analogs and steroids have been investigated in detail (Scheme 1). The intermediate compound P_2S_2 phosphine hydride **3** was synthesized as described in scheme 1 [1]. The coupling of **3** with steroids such as 2/4 amino estrone/estrodiol and the peptide analog GlyGlyOEt was undertaken using peptide the coupling reagent HBTU in the presence of triethylamine. Furthermore, the P_2S_2GlyGlyOEt phosphine hydride was formylated using formaldehyde in ethanol and then complexed with a Re(V) precursor to yield the new Re(V) bioconjugate **5**. This offers a potential route to label biologically active peptides with radionuclides such as Tc-99m and Re-186/188 for use in cancer diagnosis and/or therapy.



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[1] Gali, H.; Karra, S.R.; Reddy, V.S.; Volkert, W.A.; Katti, K.V. *(Submitted).*