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

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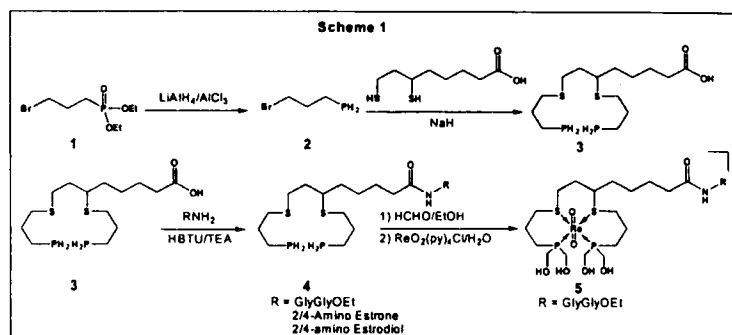
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Synthesis of Dithio-Diphosphine (P_2S_2COOH)-Based Bifunctional Chelating Agent. Its Coupling Reactions with Peptide Analogs and Steroids

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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/estradiol and the peptide analog GlyGlyOEt was undertaken using peptide the coupling reagent HBTU in the presence of triethylamine. Furthermore, the P_2S_2 GlyGlyOEt 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.



References

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