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Aberrant Synthesis and Secretion of a Human Epidermal Growth Factor-Like Immunoreative Factor by Human Breast Cancer Cells.

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We examined in detail the synsthesis and secretion of MCF-7 EGF by the cells. Our enzyme immunoassay system for hEGF distinguished MCF-7 EGF from hEGF or transforming growth factor type-α. The amount of MCF-7 EGF secreted increased linearly up to 24 h. Secretion of the molecule was inhibited by cycloheximide and actinomycin D, but not by cytosine arabinoside, suggesting that synthesis of MCF-7 EGF requires DNA transcription but not DNA replication. A sigificant amount of MCF-7 EGF was detected in the cells. In the presence of the ionophore monensin, the amount of extracellular MCF-7 EGF decreased greatly and that of intracellular MCF-7 ECF increased.

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Identification of a Polypeptide Secreted by Human Breast Cancer Cells (MCF-7) as the Human Estrogen-Responsive Gene (pS2) Product.

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Human epidermal growth factor-like immunoreactive factor (EGF-LI) synthesized and secreted by human breast cancer cells, strain MCF-7, was isolated in pure state. Thirty-seven micrograms of EGF-LI was purified by anion-exchange, gel permeation, and reverse-phase high-performance liquid chromatography from 2 liters of serum-free medium conditioned by the cells. The sequence of the first 36 amino acids from the N-terminus was determined with a gas-phase protein sequencer. Computer-assisted screening revealed, quite unexpectedly, this sequence to be completely identical to that of the translational product encoded by pS2, the human estrogen-responsive gene, over the region extending from residue 25 to 60.

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Epidermal Growth Factor-Like Immunoreactive Substance(s) in Human Platelets.

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Some properties of epidermal growth factor (EGF)-like immunoreactive substances (EGF-LI) found in human platelets were studied. Human platelets were treated with acidic, alkaline, or hypotonic solutions or by freezing-thawing. Then after cantrifugation the hEGF-LI in the resulting supernatant was examined by our rapid enzyme immunoassay system for the presence of hEGF-LI's released from the platelets. The amount of hEGF-LI released from plalatelets varied with the treatment, the alkaline or freezing-thawing treatment being the most effective in liberating the hEGL-LI. The hEGF-LI released showed their molecular weights of about 280, 56, 20, and 6 kdaltons by gel filtration of Sephadex G-100.