Abstract

Heparan sulfate proteoglycans and their corresponding binding sites have been suggested to play an important role during the initial attachment of murine blastocysts to uterine epithelium and human trophoblastic cell lines to uterine epithelial cell lines. Previous studies on RL95 cells, a human uterine epithelial cell line, had characterized a single class of cell surface heparin/heparan sulfate (HP/HS)-binding sites. Three major HP/HS-binding peptide fragments were isolated from cell surfaces by tryptic digestion, and partial amino-terminal amino acid sequence for each peptide fragment was obtained (Raboudi, N., Julian, J., Rohde, L. H., and Carson, D. D.(1992) *J. Biol. Chem.* 267, 11930-11939). In the current study, using approaches of reverse transcription-polymerase chain reaction and cDNA library screening, we have cloned and expressed a novel, cell surface HP/HS-binding protein, named HP/HS interacting protein (HIP), from RL95 cells. The full-length cDNA of HIP encodes a protein of 159 amino acids with a calculated molecular mass of 17,754 Da and pI of 11.75. Transfection of HIP full-length cDNA into NIH-3T3 cells demonstrated cell surface expression and a size similar to that of HIP expressed by human cells. Predicted amino acid sequence indicates that HIP lacks a membrane spanning region and has no consensus sites for glycosylation. Northern blot analysis detected a single transcript of 1.3 kilobases in both total RNA and poly(A+) RNA. Examination of human cell lines and normal tissues using both Northern blot and Western blot analyses revealed that HIP is expressed at different levels in a variety of human cell lines and normal tissues but absent in some cell lines and some cell types of normal tissues examined. HIP has relatively high homology (~80% both at the levels of nucleotide and protein sequence) to a rodent ribosomal protein L29. Thus, members of the L29 family may be displayed on cell surfaces where they may participate in HP/HS binding events.