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PROTEOMIC ANALYSIS OF THE HUMAN RECEPTIVE *VS* NONRECEPTIVE ENDOMETRIUM UNVEILED A FUNCTIONAL RELEVANCE OF STATHMIN 1 AND ANNEXIN A2

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During the so-called "window of implantation", a two-day period along which the endometrium is receptive to embryonic implantation, the luminal endometrial epithelium acquires a receptive phenotype through specific structural and functional changes, encompassing modifications in the plasma membrane and cytoskeleton.

Despite that a complete gene expression profile of the endometrium throughout the menstrual cycle has been achieved in recent years, the proteomic description of the window of implantation has not yet been addressed. We aimed to compare the proteomic profile of the human endometrium 2 (pre-receptive) and 7 days (receptive) after urinary luteal hormone surge in the same menstrual cycle from 8 fertile women (corresponding to days 16 and 21 of the menstrual cycle), identifying and quantifying the proteins differentially expressed using DIGE and MS. Proteins were extracted and labeled with CyDye DIGE fluorofores and separated using 2-DE. Image analysis using the DeCyder® software revealed a distinctive proteomic repertoire during the window of implantation, and 34 differentially expressed proteins were identified by MALDI-MS followed by database searching. Interestingly, stathmin 1 and annexin A2, two cytoskeleton-related proteins, displayed an opposite regulation in the receptive *vs* pre-receptive endometrium. Western Blot and immunohistochemistry provided validation and localization of stathmin 1 and annexin A2. Furthermore, when we induce a refractory endometrium by the insertion of an intrauterine device (IUD), the proteomic pattern of these two molecules becomes the opposite of a normal situation. These results put forward these proteins as potential key targets for human endometrial receptivity and interception.