

CHAPTER 21

RECEPTIVITY EVALUATION WITH SPECTROSCOPY

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Is it possible to evaluate endometrium receptivity non-invasively?

The only available test for measurement of the receptivity status of the endometrium is ERA test. Because ERA test requires endometrial biopsy it is accepted as an invasive test. On the other hand, MRS is a noninvasive method based on the spectroscopy signal of endometrium, to identify the receptivity status. Many leading authors say at the last paragraph of their paper's "in the near future, the new test will be developed for identifying the endometrial receptivity markers by non-invasive methods". We get closer to achieving new and non-invasive receptivity test. MRS might be interesting candidate tool to consider, particularly with the potential role of endometrial signals as a determinant of endometrial well being. Only one study from our group evaluated the receptivity status of eutopic endometrium. If we can achieve routine use of MRS we can improve our clinical experience by introducing and enabling a personalized diagnosis of the WOI (1-3).

Which endometrial molecules determined by MR spectroscopy depict the endometrium in receptive phase?

MRS, one of the main non-invasive technological platforms, is concerned with the quantification of some molecules in the living tissue including endometrium. Peaks in MR spectroscopy are proportional to the concentrations of the measured metabolites and denominated as ppm. The most commonly defined endometrial metabolites in different conditions were lactate (Lac), N-acetylaspartate (NAA), creatine (Cr), and choline (Cho). NAA is produced in neurons and is a marker of both the number of intact neurons and the density of intact axons. The most prominent peak of NAA is the resonance at 2.0 ppm. Cr is an indicator of cell energy status and it is present at higher levels in the glial cells. The most prominent peak of Cr is the resonance at 3.0 ppm. Cho is a marker of the cell membrane turnover. The most prominent peak of Cho is obtained at 3.2 ppm. Lactate is an indicator of cellular hypoxia and anaerobic metabolism. By inhibiting wash-out of the lactate,

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