

APPLICATIONS OF MAGNETIC RESONANCE SPECTROSCOPY TO TINNITUS RESEARCH: CURRENT ISSUES AND FUTURE PERSPECTIVES

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Tinnitus poses real challenges for researchers because of its subjective nature, the complexities involved in establishing underlying generator sites, and the difficulties inherent in dissociating the effects of this phenomenon from peripheral hearing loss in the central nervous system. As part of an effort to gain greater insight into mechanisms of tinnitus, magnetic resonance spectroscopy (MRS) is being advocated as a means to study and quantify neurobiochemical properties of brain areas particularly, auditory cortex, in a non-invasive manner. The utility of using MRS to study tinnitus is underscored by its potential to: 1) identify biomarkers, 2) clarify and track disease pathogenesis, 3) correlate neurobiochemical properties with neuroanatomical data obtained from structural MRI, 4) evaluate short-term and long-term treatment effects, and 4) serve as a tool in drug discovery and clinical trials. Combined with structural and functional imaging data, MRS can compliment and expand the information derived from these other modalities. Developing and refining MRS in the context of tinnitus related studies is an important step for establishing rational treatments and ultimately in providing a segue towards a cure.