BETH ISRAEL DEACONESS MEDICAL CENTER
Technology Ventures Office

BIDMC 1034: Hyperpolarized MRI Contrast Agents Reveal Bloodflow

A new generation of magnetic resonance imaging is on the horizon with the advent of hyperpolarization technology. Contributing to this advance, radiologists led by Dr. David Alsop at BIDMC have invented a novel bloodflow and perfusion imaging technique.

A new way to use hyperpolarized contrast agents in MRI, the technique permits perfusion imaging with signal-to-noise ratios that are much higher than otherwise possible today and extends the utility of lower field MR scanners. Monitoring bloodflow with this MRI technique avoids the ionizing radiation needed for other imaging modalities like PET.

Using either dynamic nuclear polarization or parahydrogen induced polarization simple ^{13}C-enriched reagents of a broad chemical class, particularly alcohols, are readily produced and they offer a very attractive profile as biomedical imaging agents.

Market:
- ✓ Cardiologists monitoring ischemia
- ✓ Surgeons assessing pre- and post-operative vascular perfusion as for embolism or stroke
- ✓ Oncologists monitoring tumor bloodflow

Commercialization:
- ✓ Ability to market MRI and hyperpolizer instrumentation for enhanced bloodflow imaging
- ✓ Flexible licensing options

Competitive Advantages:
- ✓ Improved image clarity and ability to quantify diagnostic biometrics
- ✓ Cross-platform functionality

Upon administration, the method follows the long T_1 relaxation time of hyperpolarized carbon in the alcohols, which is long enough to permit transfer, injection, distribution and imaging.

Any physician tracking blood flow could benefit from images generated with this technique. From assessing cardiac ischemia or potential for stroke to confirming success in vascular surgery or cancer therapy, the medical applications are wide ranging and numerous.

Stage of Development:
Validated proof-of-concept with human blood samples
Animal imaging ongoing

Patent / Licensing Status:
Patent Pending from U.S. Application #60/814,945

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