# Lay summary for completed research projects

**CCR No and Study Title:**

| CCR No and Study Title: | CCR0355  
|------------------------|----------------------------------------------------------------------------------------------------------------------------------|

**CI and Sponsor names:**

| CI and Sponsor names: | Professor Nandita de Souza  
Institute of Cancer Research |
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**Study opening date:**

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**Proposal and Objectives:**

Magnetic Resonance Spectroscopy (MRS) is a method that can detect the presence and amount of certain molecules within the body. The molecules of interest may be either those characteristic of normal or diseased tissue, or anti-cancer drugs and their breakdown products. The principle of the technique is almost identical to magnetic resonance imaging (MRI) and uses the same scanner. It can provide important information about how cancers are behaving and give early indications of whether they are responding to treatment.

The main objectives of this study were:

1. To develop improved MRS techniques with human volunteers
2. To apply these to address specific clinical questions in small patient groups for pilot clinical studies
3. To evaluate specific metabolite ratios using MRS as a predictive marker in patients with diffuse large B cell lymphoma.

**Main Findings:**

This study has enabled the successful development of MRS techniques, leading to wider investigations of its use, for example:

1. In clinical trials, determining response to treatment with new anti-cancer drugs.
   - Non-invasive MRS measurements of choline/water have been shown to reflect the therapeutic effect of the drug temozolomide on low-grade gliomas (a type of brain tumour)
   - Measurement of tumour lactate levels has been achieved and reduction in this molecule is now being investigated as a marker of response to treatment in a multi-centre clinical trial sponsored by Cancer Research UK and the pharmaceutical company, AstraZeneca.

2. Grading tumours
   - High-grade gliomas have been shown to have higher levels of lipid (fat) than low-grade gliomas, indicating that MRS may be...
useful in disease grading.

| Implications for practice/future research: | Magnetic Resonance Spectroscopy is a non-invasive, observational, technique that does not require the use of any additional drugs or ionising radiation. It can provide an early indication as to whether a particular drug is working or not, so that treatment options can be maximised for each patient. |
| Dissemination Plan: | The results of this study have been published widely in peer-reviewed radiological journals and presented at International conferences on magnetic resonance imaging in medicine. |