



**Application number/Title:** 23929 - Testing the association between magnesium and depressive symptomology

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**Keywords provided by the Applicant PI to describe the research project:**

Magnesium, Depression, Inflammation, Diet, CRP

**Funding body:** Funded by PI (as part of a pilot study)

**Application Lay Summary:**

1a: We aim to test the association between varying levels of exposure to magnesium in the diet and future probable depression. Research questions include:

- i) Are individuals consuming a low magnesium diet at a great risk of developing probably depression
- ii) How do social demographic factors and health states interact with magnesium consumption and depression
- iii) Does magnesium consumption mediate the known relationship between C reactive protein levels and depression
- iv) Does magnesium consumption provide a potential mechanism for probably depression in the general population.

1b: This work aims to demonstrate a credible association between magnesium levels and depression as well as providing suitable covariates to explore possible mechanisms. One possible biological mechanism relates to the production of new neurons in the adult brain where atrophy in the hippocampus has been shown in depressed patients. Magnesium supplementation in mice significantly increased natural stem cells (NSC) production in the hippocampus. Additionally, aged mice undergoing long-term magnesium supplementation reduced the age-associated decline in NSC proliferation. If this provides good evidence, Magnesium may provide a novel avenue for translational research in the

treatment of depressive symptoms.

1c: The proposed project will use magnesium levels through dietary recall (measured 5 times), depressive symptoms (measured 3 times) and CRP (measured once) to undertake a series of analyses:

1. Descriptive analysis to compare cases of probable major depression (as derived by Smith et al., 2013) and non-cases on a range of variables including magnesium intake demonstrating an association with depression from previous studies recorded in the baseline assessment
2. Assess the relationship with magnesium intake and major lifetime depression over time.
3. Examine to what extent magnesium levels explain the known relationship between CRP and depression

1d: The full cohort will be required. No samples are required at this time.