



Accelerating research towards a cure for multiple sclerosis

## Multiple Sclerosis – ‘Tis the season for food, family, friends and frankincense

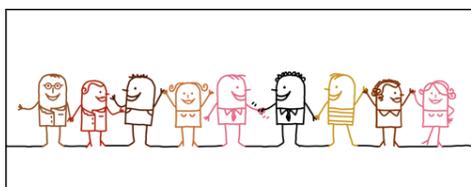
*By Farren Briggs PhD, ScM*

The weeks between Thanksgiving and the New Year mean many different things to each of us. But I think it’s fair to say we all have a lot of “F”s on our minds: food, family, and friends, and for some of us, frankincense. This December delivered on publications touching on all these festive themes.

This first study by Fitzgerald et al<sup>1</sup>, published in *Neurology*, looked at the relationship between diet and disease severity in persons with MS (PwMS). It was a cross-sectional study – meaning both the ‘exposure’ (diet) and the ‘outcome’ (disease severity) were recorded at the same time. Data were collected on 7,639 PwMS using a detailed questionnaire, which was administered by the North American Research Committee on MS (NARCOMS) in 2015. There were 26 dietary questions which were used to determine the amount of the following foods in each diet: 1) fruits, vegetables, and legumes, 2) whole grains, 3) sugars from desserts and sweetened beverages, and 4) red and processed meats. The values were also combined into a single composite score of diet quality. There were some notable, but not surprising differences in the general characteristics of PwMS with the lowest versus the highest diet quality: those with the lower diet quality were more



likely to have a higher body mass index, more likely to smoke cigarettes, less likely to participate in leisure physical activity, and of lower income compared to those with the highest diet quality. There were no differences by age, gender, MS subtype, DMT use, race, onset age, and disease duration across the diet groups. The highest diet quality score included higher levels of fiber, calcium, whole grains, fruits, vegetables, and legumes, and lower levels of added sugar, sweetened beverages and red/processed meats. The authors compared disability levels between those with the lowest and highest diet quality score. Those with the best dietary scores were 25% less likely to have severe versus mild physical disability than those with the worst dietary scores. And it seems this effect was largely driven specifically by high levels of whole grains and dairy. Also those with the highest dietary scores had lower scores on a depression tool than those with the worst dietary scores. Lastly, the authors combined diet, with smoking status, body mass index, and physical activity levels to create a “healthy lifestyle” score – those with higher healthy lifestyle scores had a lower odds of reporting severe fatigue, depression, pain or cognitive impairment. All in all, this study suggests better diet does do a body and mind good, but I must acknowledge one limitation of this cross-sectional study design: we *cannot* establish temporality – thus, are those with better diets having better MS outcomes, or are those with better MS outcomes (because they are less disabled and less likely to be depressed) able to eat healthy and engage in less adverse behaviors? It’s the chicken and egg question – it’s not clear which came first. Nonetheless, this study was a well-done cross-sectional investigation from which many hypotheses can be generated.



Now during the holidays, we engage our families – both those we were born into and those we have chosen. For many of us, we interact with our various ‘families’ in-person, via e-mails, and on the multitude of online social media platforms – and we intuitively understand that being *social* is good for us. But the question is: do in-person and online interactions have the same effect on emotional health? Sparling et al<sup>2</sup>, published in *Quality of Life Research*, one such study using 508 PwMS from the NARCOMS registry and social participation survey. Again, this too was a cross-sectional study, and the authors were concerned with participation bias – whether the PwMS who decided to complete the social participation survey truly represents the general MS population – nonetheless, this is a concern for every epidemiologic study, and again these findings are hypothesis generating. The authors observed that in-person interactions with friends were associated with increased happiness, and decreased depression, anxiety and stress. There were no association between happiness, depression, anxiety, and stress

with online-interactions once in-person interactions were accounted for. Even though we can't state if it is a 'causal' association (again, the chicken and egg situation), it doesn't hurt to make plans and catch-up with someone in-person.

The last study, by Stürner et al<sup>3</sup>, published in *Journal of Neurology, Neurosurgery, and Psychiatry*, gives an update on a clinical trial using frankincense extract and disease activity in RRMS. Frankincense is an aromatic resin (pictured right) extracted from hardy trees native to the Arabian Peninsula (Yemen, Oman) and northeastern Africa (Somalia). For millennia, frankincense has been used in non-Western medicine as an anti-inflammatory compound. This update was to report on the safety of frankincense extract in a small sample of 28 PwMS. Overall, the extract was well tolerated, however there was an increased in gastrointestinal events. The authors compared the number of MRI lesions at baseline to 8 months later while taking the extract. There were significant reductions in the number of new lesions, the total number of lesions, and the volume of the lesions at month 8. There was also a modest yet significant increase in total brain volume between baseline and month 8. The authors also assessed changes in the immune cell populations during this time, and there was no difference in the overall count of white blood cells, but there were significant changes in specific subsets – suggesting that the beneficial effect of the frankincense extract may be through immunomodulatory mechanisms. These results are intriguing and I will be following this clinical trial over the next many months at the following government website: <https://clinicaltrials.gov/show/NCT01450124> (FYI: all US clinical trials are registered on this site).



So, 'tis the season to be festive, but do eat well, connect with friends and family, and try not to spend all your gold.

1. <https://www.ncbi.nlm.nih.gov/pubmed/29212827>
2. <https://www.ncbi.nlm.nih.gov/pubmed/28702838>
3. <https://www.ncbi.nlm.nih.gov/pubmed/29248894>