Examining ways to improve sleep quality and support healthy ageing in older adults with sleep disturbances through targeting the gut microbiome with saffron supplementation

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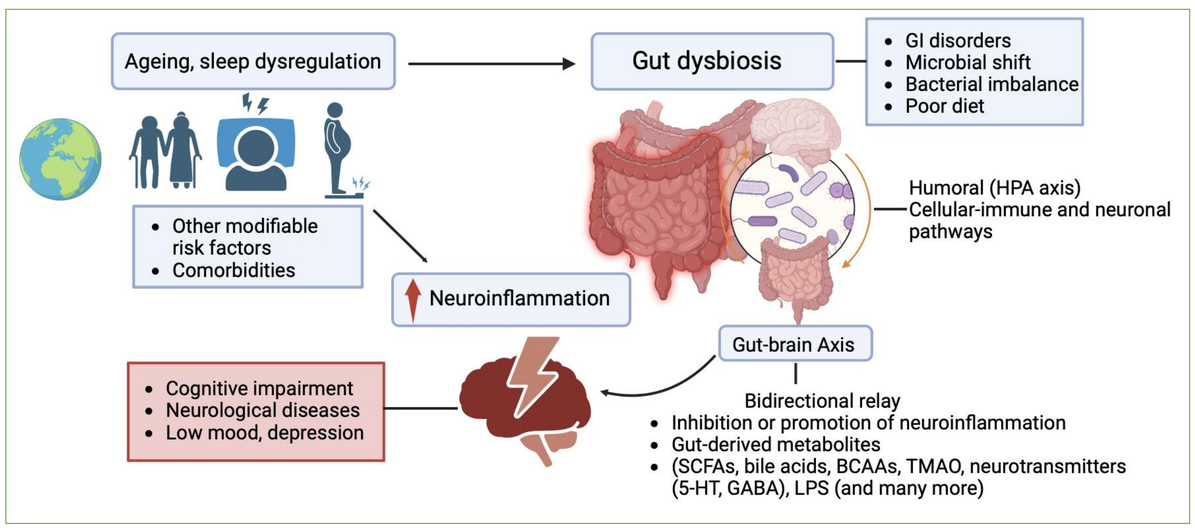
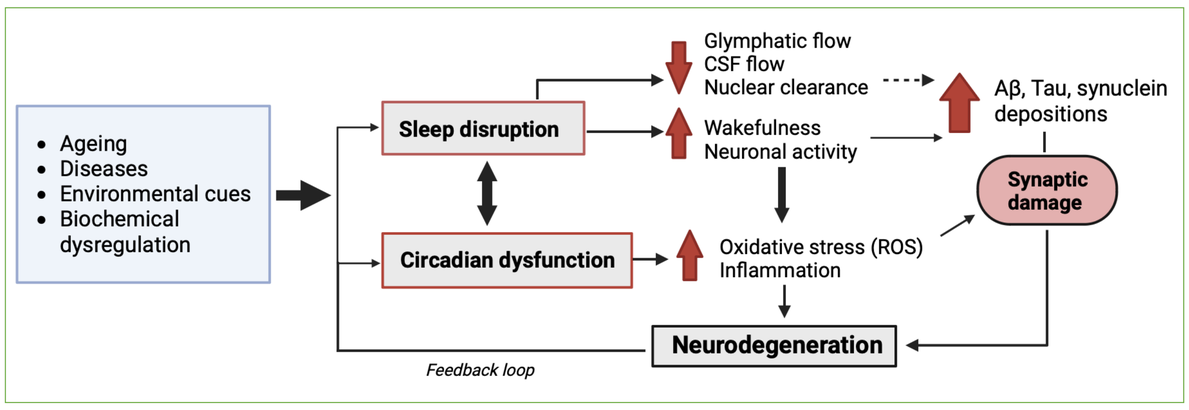
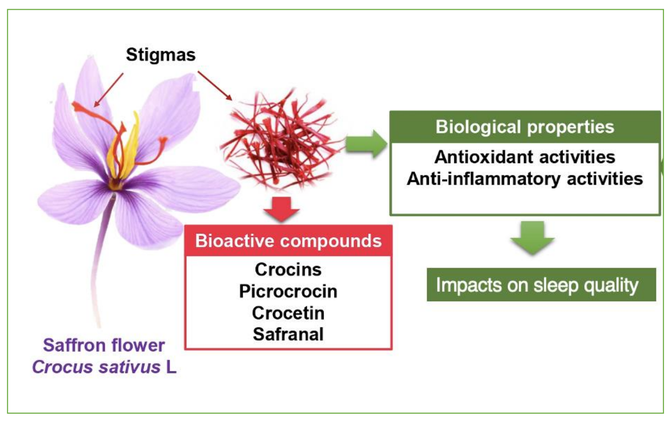
- Age-related neurodegenerative diseases are a growing societal problem with numerous repercussions.
- Lifestyle and environmental factors play a key role in their development, with sleep quality being one of the major contributors to age-related cognitive decline and dementia.
- Insomnia symptoms tend to increase with age, with prevalence rates approaching 50% in adults aged 65 and over, hence strategies to improve sleep quality in older people are essential.



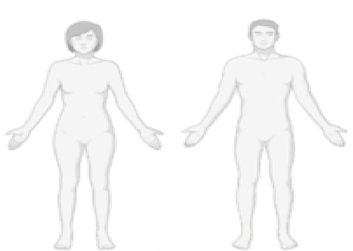


- The gut-brain axis plays an important role in health and disease, with recently reported impacts on healthy ageing.

- Saffron (Crocus sativus) and its related food bioactive compounds safranal, crocin and crocetin have been reported to independently improve sleep and to affect the gut microbiota.



STUDY DESIGN



- 52 older adults (70/30 F/M, 65years old) with sleep complaints
- Dietary treatment
- Sleep hygiene education

safr'inside™ THINK POSITIVE

Group 1 Saffron* 30mg per day (n=26)

Group 2 Placebo (n=26)

Baseline

Tests + measurements + Fecal samples (*n=26*)

4weeks

Post-intervention

Repeated tests + measurements + Fecal samples (*n=25*)

Primary outcome

Sleep quality

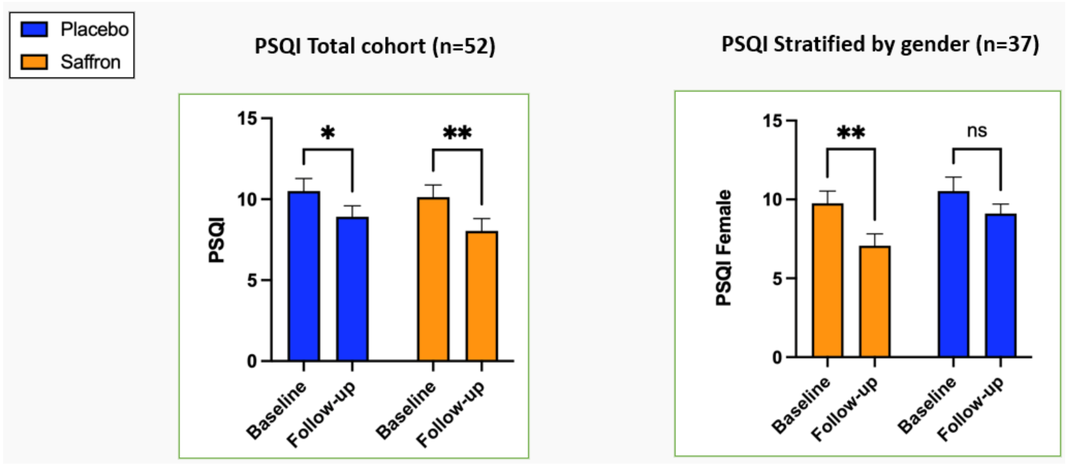
1. **Subjective**: Questionnaires
   Pittsburgh sleep quality Index (PSQI),
   Epworth sleepiness scale (ESS), Insomnia severity index (ISI)
2. **Objective**: Potable Electroencephalogram (EEG) 7 nights

Secondary outcomes

- **Gut microbiome**
- Cognition and wellbeing

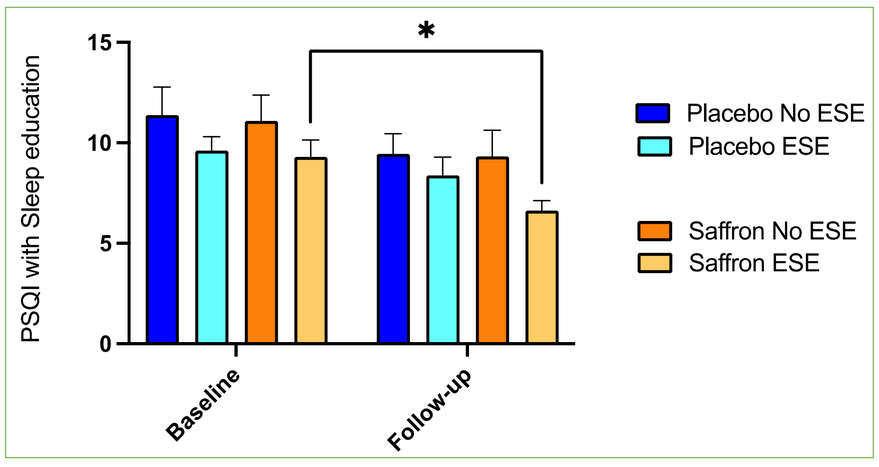
Microbiome characterization

RESULTS



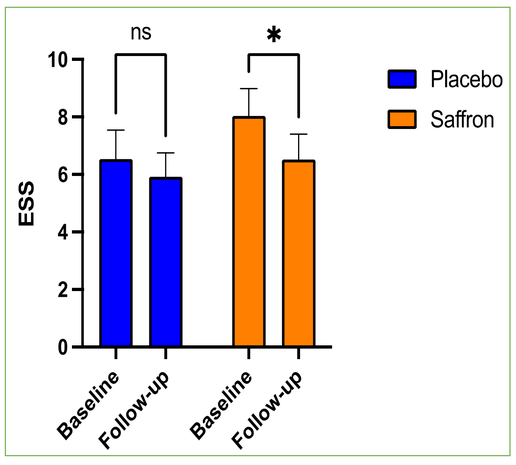
Saffron yields better effects on subjective sleep quality scores in Female

Saffron (extract) improved subjective sleep quality



PSQI Total cohort and Enhanced Sleep Education (n=52)

Synergetic effect of sleep education and dietary intake of Saffron



ESS* Total cohort (n=52)

Saffron (extract) improved daytime sleepiness

CONCLUSIONS

Can Saffron extract (Safr'inside) be used to improve sleep quality in older adults via the modulation of the gut microbiome?

✓**YES**

- Global trend on sleep quality, stronger effects in Female (Lower PSQI (p=0.02) and ESE (p=0.01))
- Stronger impacts on subjective sleep quality scores when combined with sleep hygiene education (ESE) (p=*0.004*)
- *Increase* SCFAs-producing bacteria *Faecalibacterium* (p.value = 0.02), *Lachnoclostridium* (p.value = 0.04), *Roseburia* (p=0.02)
- Increase in *Faecalibacterium* correlates with decrease in PSQI scores in Saffron (p.value = 0.03)

❑**No impact on objective sleep (EEG), cognition or wellbeing**

➢**Bigger sample size and sex stratification, longer intervention, dose-response?**