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The impact of nutrition on neuroinflammation in vitro and in vivo

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Propositions

1. *In vitro* experiments are practical methods to screen for synergistic or additive effects of substances on particular cell types, but cannot replace animal experiments (chapter 2 and 4).
2. To improve PET imaging of neuroinflammation, scientists should search for better targets, rather than to focus on better tracers for the TSPO receptor.
3. [¹⁸F]FDG PET imaging of the brain is like a double-edged sword: it enables monitoring a wide variety of processes in the brain (e.g. neuronal activity, brain damage, neuroinflammation), but this diversity of applications hampers interpretation of the results (chapter 6).
4. Ex-vivo tracer uptake measurements and post mortem tissue staining may provide more sensitive and cheaper tools to detect mild neuroinflammation than PET imaging (chapter 6). However, PET imaging offers the possibility to investigate a biological system under physiological conditions, to monitor intact animals longitudinally and to readily translate preclinical findings to clinical trials.
5. Diet can have both prophylactic and therapeutic effects. Therefore, the future studies on dietary interventions should include both strategies (chapters 6, 7, 9).
6. Your health status is affected by what you eat (chapter 6, 7). Studies on dietary interventions should therefore not only lead to new therapeutic strategies, but also to improved general dietary recommendations.

7. Even though preventive dietary interventions are easier to apply in animal studies, they are difficult to apply in humans. However, it is better to prevent than cure. Therefore, preventive dietary interventions should be applied in patients with increased risk of inflammation-related brain diseases.
8. Too much emphasis on reduction of the number of animals per individual experiment leads to useless results from underpowered studies.
9. From an ethical point of view, it is better to use more laboratory animals subjected to less discomfort for an experiment than to reduce the number of animals and expose them to more discomfort.
10. Confrontation with different points of view and reconsideration of your own opinion is much more enriching than isolating yourself from people who think differently.
11. Life is the art of making choices. Also for a PhD-student, a careful selection of priorities is essential.