

# Methylglyoxal and the brain microcirculation

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*Propositions accompanying the dissertation:*

## **Methylglyoxal and the brain microcirculation** the source matters

1. Methylglyoxal from the circulation do not cause any harm to the cerebral microcirculation, when otherwise healthy. – *This thesis*
2. The endogenous formation of methylglyoxal due to hyperglycaemia contributes to the higher risk of cerebral vascular complications in diabetes mellitus. – *This thesis*
3. Methylglyoxal from plasma is able to cross the brain endothelium, however, the amount is insignificant. – *This thesis*
4. Intermediate levels of plasma methylglyoxal are associated with higher incidence of lacunar infarction compared to low plasma methylglyoxal in the population of The Maastricht Study. – *This thesis*
5. "Scavenging methylglyoxal in plasma is like mopping with the tap running, whereas closing the tap—targeting the formation and detoxification of methylglyoxal—would be a more effective treatment strategy for methylglyoxal-induced cerebral microvascular damage." – *This thesis, impact*
6. "The contents of the poison make the poison" is as relevant as the statement "*only the dose makes the poison*" by Paracelsus when studying methylglyoxal.
7. Despite journals' policies to prevent positive publication bias, submissions are still being rejected on the basis of non-significant results, leading to a skewed representation of research outcomes.
8. In biomedical research, models are not exact replicas of reality and are never perfect, yet they remain relevant for our understanding of physiological and pathological processes.
9. With current methods available in cellular and molecular neuroscience, the functioning of the brain can be compared to Schrödinger's Cat, where observing or intervening to study its intricate processes inevitably alters its natural state and dynamics.
10. "Diversity is a fact, but inclusion is a choice we make every day" – *Nellie Borrero*
11. "All we have to decide is what to do with the time that is given us" – *J.R.R. Tolkien*