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Oxidative stress in chronic diseases: causal inference from observational studies

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Citation

Luo, J. (2022, September 1). *Oxidative stress in chronic diseases: causal inference from observational studies*. Retrieved from <https://hdl.handle.net/1887/3454705>

Version: Publisher's Version

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Note: To cite this publication please use the final published version (if applicable).

Oxidative Stress in Chronic Diseases:

Causal inference from observational studies

1. The failure of antioxidant supplements in preventing chronic diseases does not provide sufficient ground to refute the oxidative stress theory. (this thesis)
2. Low leukocyte mitochondrial DNA copy number is likely to be a causal risk factor in atherosclerotic cardiovascular diseases. (this thesis)
3. Antioxidative capacity, but not the circulating level of vitamin E, is relevant to chronic diseases and their risk factors. (this thesis)
4. Inflammation, inextricably linked to oxidative stress, associates with neurological disease in a complex manner. (this thesis)
5. “Triangulation has considerable potential to improve causal inference in etiological epidemiology” (Lawlor DA et al., Int J Epidemiol. 2016), but all compensatory methods need to meet their assumptions and researchers need to consider the limitations.
6. “The study of mitochondria may provide new approaches for the diagnosis, prognosis, prevention, and treatment of degenerative diseases” (Douglas CW, J Clin Invest, 2013) conditioning on whether mitochondrial dysfunction is a primary etiological cause of the diseases.

Stellingen behorende bij het proefschrift

7. “It is reasonable to stop to survey the oxidation modification hypothesis in preventing atherosclerotic cardiovascular diseases with individual antioxidant supplementation” (Huggins S et al., J Am Coll Cardiol, 2021) in individuals without antioxidant deficiency.
8. The (dis)advantage of massively increasing access to large-scale open data sources is that everyone may (ab)use it.
9. The popularity of Mendelian randomization enables the establishment of multiple etiological causal relationships but also confers high risk of producing scientific garbage as “bigger, faster, and even more extensive is not necessarily better” (Burgess S et al., Int J Epidemiol, 2019).
10. “When you are studying any matter, or considering any philosophy, ask yourself only what are the facts and what is the truth that the facts bear out” (Bertrand Russel, 1959), particularly when dealing with data in epidemiological studies, where solid methodology is the premise to generate unbiased and reliable answers to pre- and well- defined research questions.
11. “If you only do what you can do, you will never be more than you are now” (Kung Fu Panda, 2016) in your comfort zone.