# **On the biomarkers of Alzheimer’s disease**

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**Abstract:** Nakamura et al. (2018) have studied amyloid-β positron-emission tomography imaging of cognitively normal individuals (CN), individuals with mild cognitive impairment (MCI) and individuals with Alzheimer's disease (AD) by using two independent data sets: a discovery data set (Japanese National Center for Geriatrics and Gerontology, NCGG) and a validation data set (Australian Imaging, Biomarker and Lifestyle Study of Ageing, AIBL), and found the biomarkers of AD are amyloid-β precursor protein (APP)669-711/amyloid-β (Aβ)1-42 and Aβ1-40/Aβ1-42 ratios, and their composites. Their data were re-analyzed in terms of fractal self-similarity and quantitative difference (Liu *et al*. 2018) in this paper. **Results**: For AIBL, the 8-dimension data CN, MCI and AD were self-similar to one another. For NCGG, the 7-dimension data of MCI and AD were self-similar to each other, but the 7-dimension data of CN and MCI or AD were not self-similar to each other, which topological difference was at Aβ1-42 between CN and MCI or at Aβ1-40 and Aβ1-42 between CN and AD. **Conclusion**: The APP669-711/Aβ1-42 and Aβ1-40/Aβ1-42 ratios and their composites may not be the biomarkers of AD.

References

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Nakamura A, et al. 2018. High performance plasma amyloid-Beta biomarkers for Alzheimer's disease.Nature. 554(7691):249-254.

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