

The error propagation in the CBF and CMRO₂ values estimated in this study was based on the measured input functions obtained in the series of our PET study. The size of the error in these values might change, for example, if the H₂¹⁵O injection or ¹⁵O₂ inhalation period is changed. In particular, method (B) is highly dependent on the shape of the input function. Further studies are required to investigate how method (B) works when the shape of the input function is different from that of the input function we used here.

In the simulation, we used a 3 min time interval between the injections of the first and second tracers. This 3 min time interval was based on a previous simulation study (Iida *et al* 2002), which suggested that images of a quality equivalent to the 3SARG protocol could be obtained if the time interval was at least 3 min. Additionally, a 3 min scan duration for oxygen would provide reasonable image quality in CBF and CMRO₂ (Kudomi *et al* 2005).

In conclusion, this study demonstrates the feasibility of the separation of the dual tracer coexistent input function for rapid and simultaneous measurement of CBF and CMRO₂ using a single PET scan that accompanies the sequential administration of two tracers. The simulation studies showed that the present method for separation of the two components H₂¹⁵O and ¹⁵O₂ provides reasonable accuracy for the quantitative values of CBF, OEF and CMRO₂.

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