

Performance assessment of O-18 water purifier

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In the synthesis of ^{18}F -FDG by the nucleophilic substitution method, ^{18}O - H_2O is usually used as target water. The target water should be recovered after synthesis and reused, because it is expensive, but recovered water contains impurities such as organic substances, and it must be purified before reuse. For this reason Sumitomo Heavy Industries, Ltd. developed an O-18 water purifier for elimination of organic substances in recovered water. This instrument consists of a UV irradiation unit and low-temperature distillation unit. Our institution had an opportunity to test use this instrument and evaluated its performance. The concentrations of organic substances after UV irradiation was greatly reduced, and recovery efficiency after distillation by the low-temperature distillation unit was very satisfactory at $99.3 \pm 0.5\%$. Furthermore, the yield of ^{18}F -FDG from ^{18}O - H_2O purified with this instrument was sufficient for the clinical use.

Key words: O-18 water purifier, ^{18}O - H_2O , ^{18}F -FDG