

## Method and apparatus for preparing Bi-213 for human therapeutic use

### Description

This invention relates to a method and an apparatus for preparing Bi-213 for human therapeutic uses. This Bismuth isotope is generated by decay of Ac-225 and due to its short half-life requires either administration to a patient in a nuclear laboratory or the handling in hospital of 10 to 50 mCi of Actinium. With these levels of radiation, the finger dose at contact and the radiation exposure limit are exceeded and special protection are required.

The present invention allows preparation of Bi-213 as a medicament in a hospital while respecting radioprotection rules and improving the performance of the Bi-213 elution. It is indeed known that Ac-225 tends to form radiocolloids which rapidly reduce the capacity of the generator. Moreover, degradation of the generator support material by Ac-225 is observed during transport to and use at the hospitals.

These serious drawbacks are solved by automation of the generator handling and the use of leaded glass shields and lead shielded containers. A specific procedure is also used to avoid formation of Actinium colloids and to improve the elution of Bi-213. To meet stringent QA criteria, the purity and quantity of Bi-213 is determined before administration by collecting the eluate in a GeLi well counter.

### Innovative aspects and main advantages

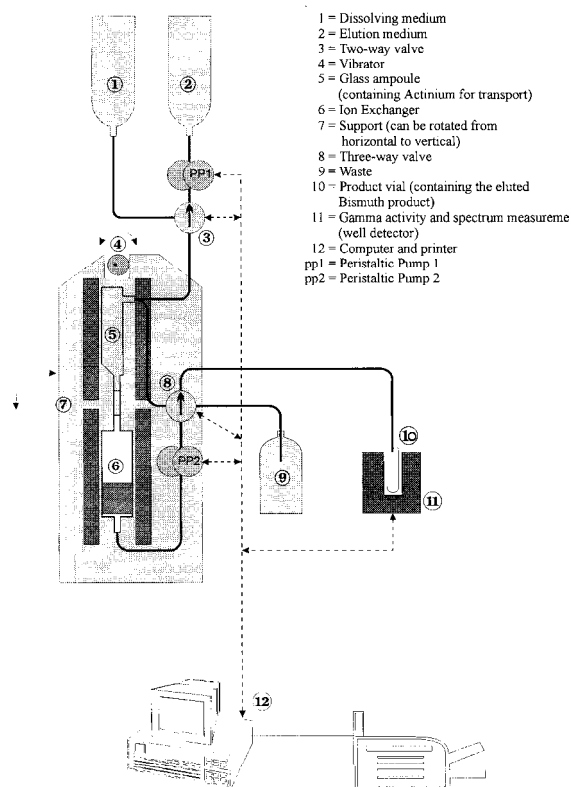
- Safe and easy handling of Bi-213 generator in compliance with existing radiation protection regulations
- Increased and reproducible yield of Bi-213
- Improved storage stability of the Bi-213 generator during transport and use at hospital
- Automated quality assurance analysis by certified on-line recording of purity and quantity of Bi-213

### Areas of application

- Cancer therapy
- Alpha immunotherapy

### Stages of development

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### Licensing Contact

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