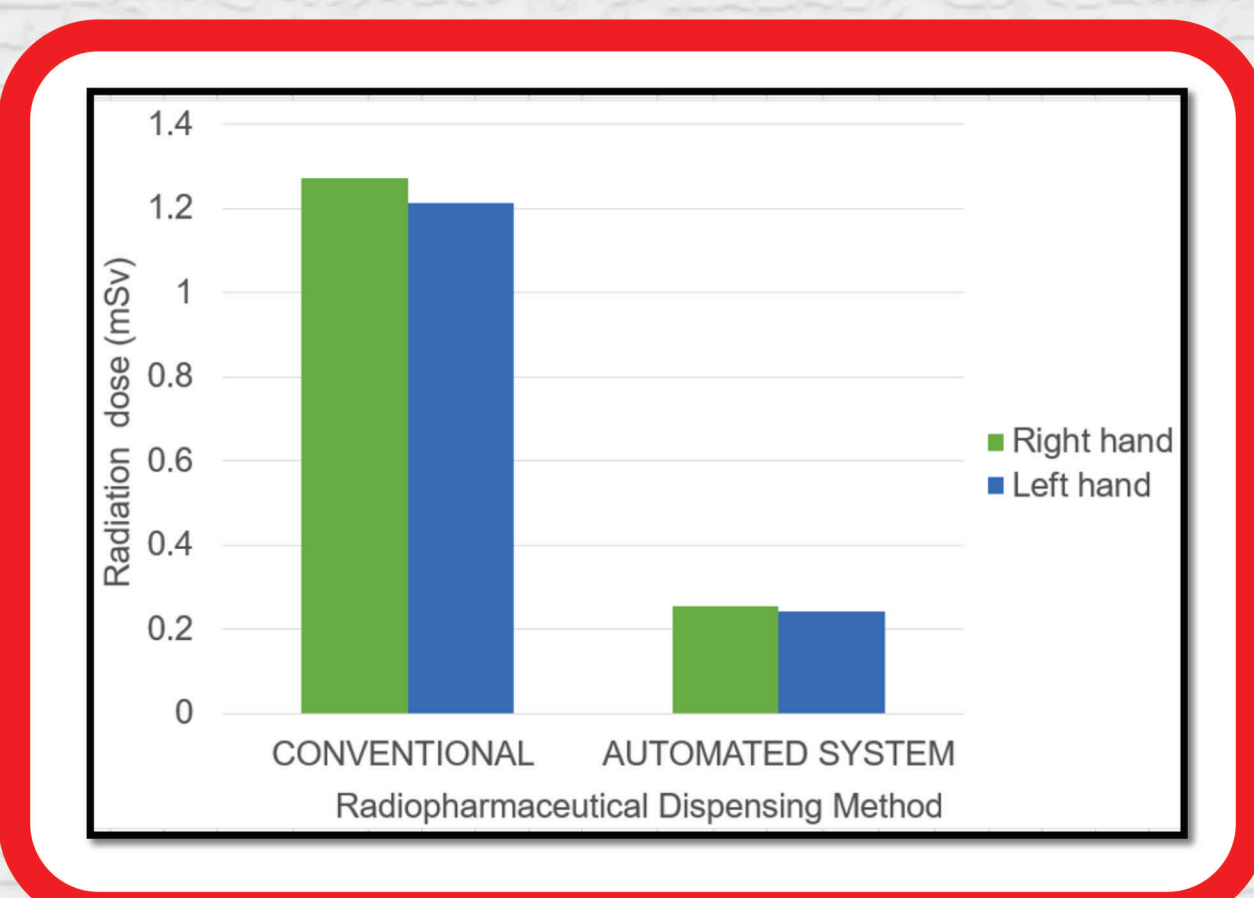




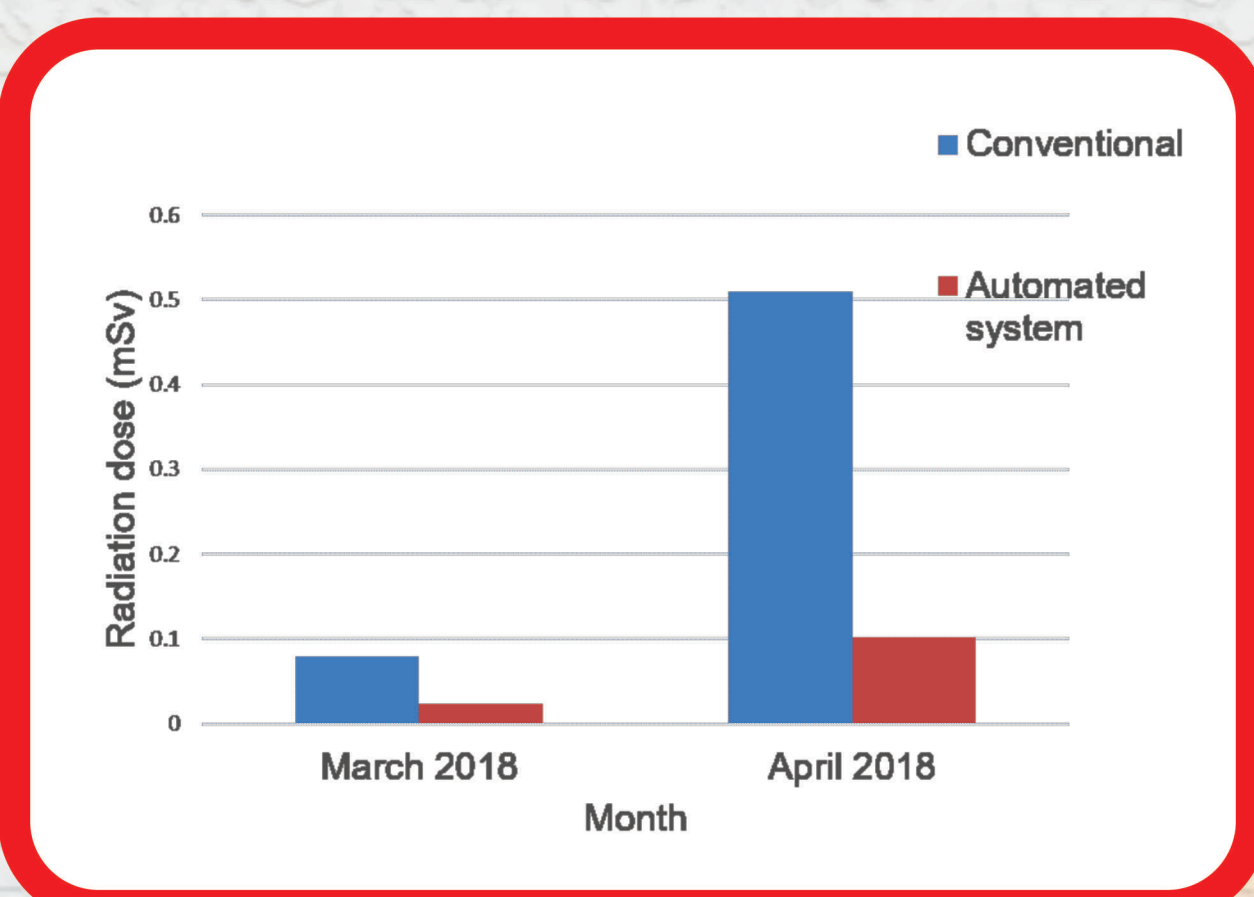
Researchers:
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Khairul Nizam Jaafar

▶ PATENT APPLICATION IN PROGRESS
▶ PATENT SEARCH: NOVEL, INVENTIVE & INDUSTRIAL APPLICABLE

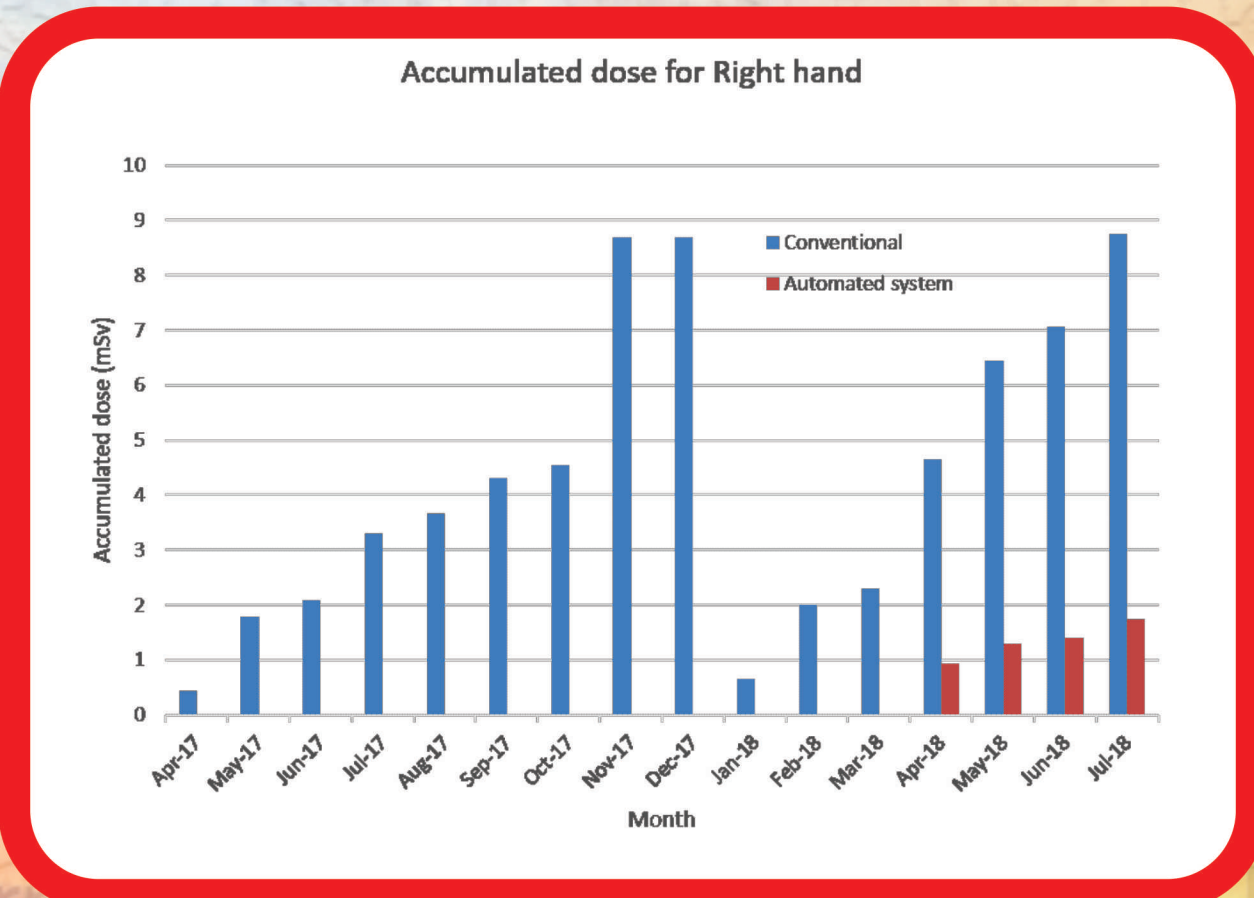
A Smart Dispenser for Dispensing High-Dose Radiopharmaceutical



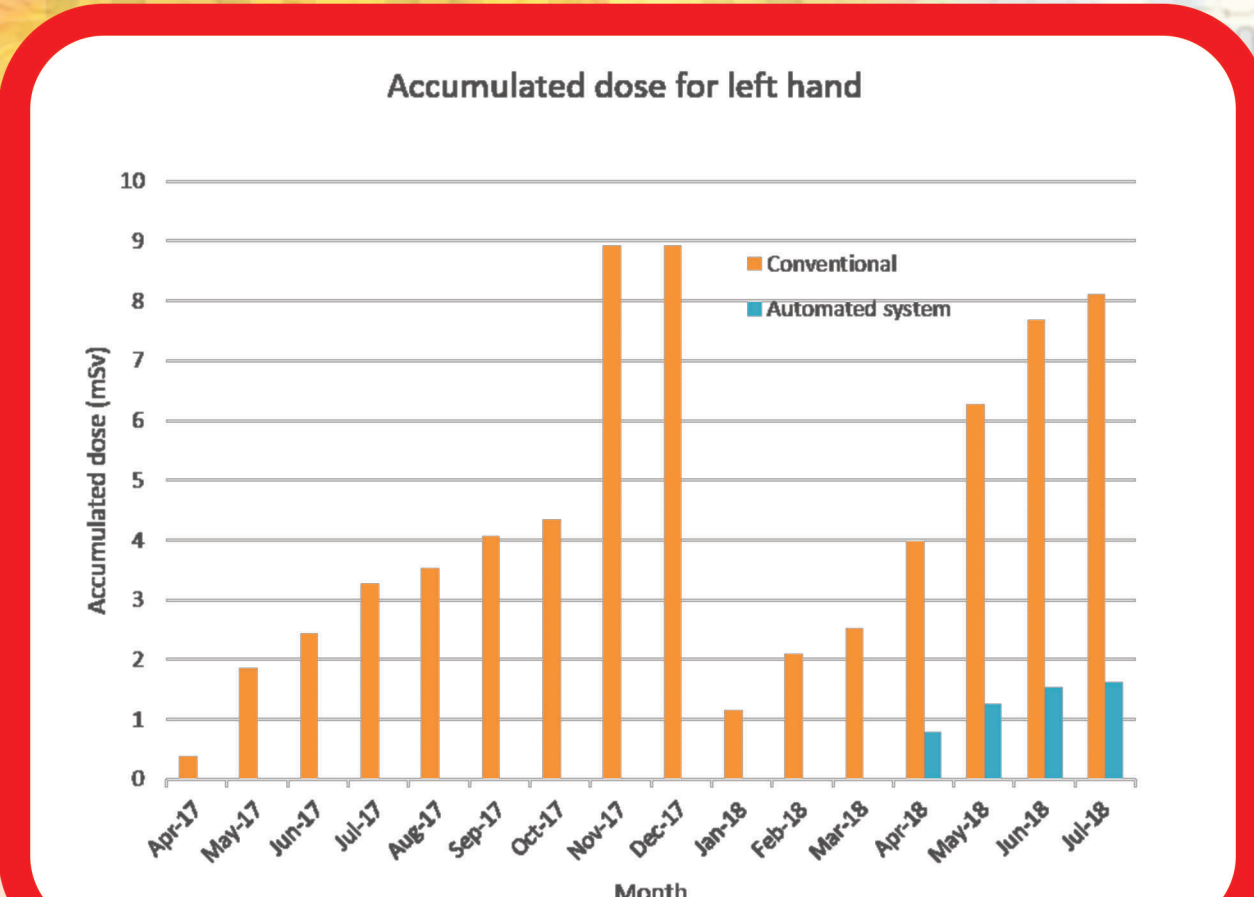
Finger Dose Analysis-Figure 1



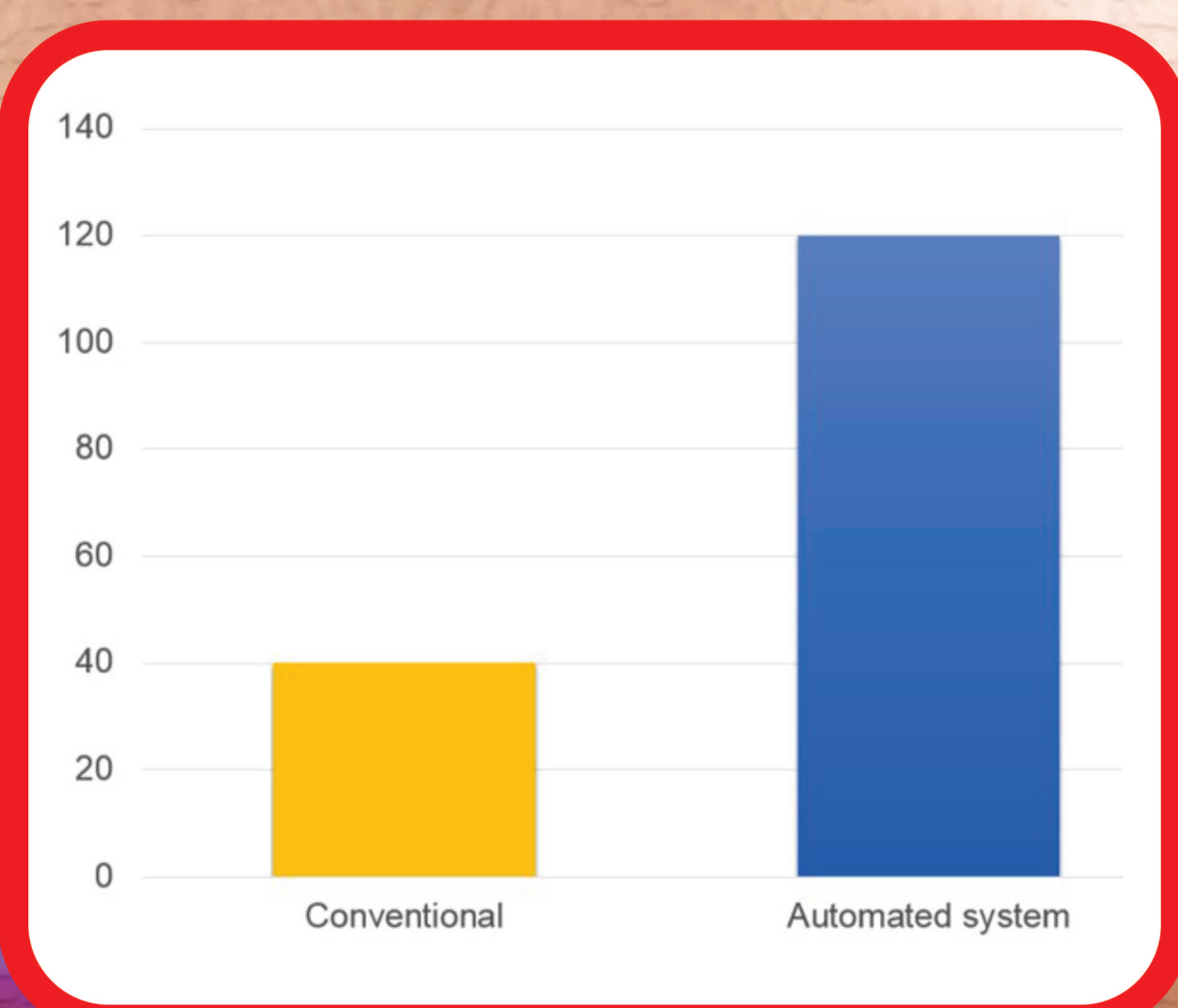
Whole-body dose analysis- Figure 2



Accumulated dose for right hand-Figure 3



Accumulated dose for left hand-Figure 4



Number of patients that can be treated in a day - Figure 5

Introduction

The product invention is a cost-effective dispenser system that transfers radiopharmaceutical from a shielded chamber to a vial/syringe with prescribed dose and it is integrated with real-time volume and real-time radioactivity measurement.

Problem Statement

- Manual dispensing technique involves manual withdrawal of radiopharmaceutical by using a syringe and it is a laborious process.
- Radiopharmaceuticals are gamma emitters, thus, nuclear medicine personnel receive radiation burden to the hands and whole-body resulting from manual practice.
- There is a risk of spillage during dispensing of radiopharmaceutical.
- Commercial radiopharmaceutical dispensers are very expensive

Novelty and Inventiveness

- The product invention provides a method for dispensing radiopharmaceutical driven by peristaltic pumps integrated with real-time volume and real-time radioactivity measurement to deliver a total amount of dose required for patient treatment
- It is a cost-effective dispenser that can be performed by using either AC or DC power supply.

Intellectual Property Status

- Patent search was done and it is proved that the product invention is novel, inventive and industrial applicable.

Usefulness and Application

- It is used to dispense radiopharmaceutical automatically from a shielded chamber to a vial/syringe with real-time volume and real-time radioactivity measurement for patient treatment.
- With the use of automated product invention, it reduces radiation exposure to nuclear medicine personnel significantly.
- It enhances the accuracy and precision of volume and radioactivity measurement.
- It reduces the risk of radiopharmaceutical spillage.
- It is a mobile unit.

Status of Invention

- The Time Readiness Level (TRL) of this invention is at stage 7. The work is in collaboration with Nagase Laundauer Sdn Bhd and National Cancer Institute, Putrajaya.

Commercial Potential

- The product invention is a cost-effective radiopharmaceutical dispenser system that provides real-time volume and real-time radioactivity measurement for dispensing high-dose radiopharmaceutical.
- Lack of affordable commercialised dispenser system in the market that can provide a single process to obtain real-time volume and real-time radioactivity measurement during dispensing of radiopharmaceutical.

Potential Partners

Chemopharm Sdn. Bhd and radiopharmaceutical industry/laboratories.

Knowledge Management

Research grant: 1 USM Bridging Grant
Publication: 2 ISI and Scopus-indexed journals

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