

Letter to the Editor

A Comparison of Fundamental Performance between Two Bench Top Clinical Chemistry Analyzers

Viroj Wiwanitkit

Thai POCT forum coordinator, Bangkok, Thailand

Dear Editor-in-Chief

The new paradigm in laboratory medicine is decentralization. The concept of bench top analyzer is introduced. After the first appearance of the bench top analyzer in 1970's, continuous improvement of the technology can be observed (1). At present, there are some available bench top clinical chemistry analyzers. Here, the author performs a study to assess the fundamental performance between two bench top clinical chemistry analyzers. The studied model is the SPOTCHEM D-concept (2) versus Reflotron (3). The two studied bench top analyzers are the two widely used clinical chemistry analyzers in Thailand. The SPOTCHEM D-concept and Reflotron are based on solid phase based technology. The scenario of Thailand is used for modeling. The details of the product property were collected and given by a main point of care testing company in Thailand, Connect Diagnostics.

Based on the concept of laboratory medicine, the good bench top analyzers might have a small size and lightweight. It should have a short turnaround time. It should also provide as much as parameters as possible. Hence, in this assessment, the comparison items include a) size (3 dimensions), b) weight, c) turnaround time, and d) number of parameters. Then the weight-turnaround time ratio, which is an important parameter determining the applicable of the analyzer in fieldwork is determined and compared. Also, the volume - number of parameter ratio, which

is an important parameter determining the usefulness in laboratory space usage of the analyzer in laboratory work is determined

The details from assessment are shown in Table 1. Focusing on the weight-turnaround time ratio, SPOTCHEM-D concept and Reflotron pose 1.67 kg/min and 1.76 kg/min, respectively. Focusing on the volume - number of parameter ratio, SPOTCHEM-D concept and Reflotron pose 630,360 mm³/parameter and 1,297,059 mm³/parameter, respectively. In this paper, the author performed a comparative evaluation on two available dry chemistry analyzers in Thai to find which analyzer has the best fundamental performance. The author uses the assessment on the weight-turnaround time ratio, which is the good indicator for determine the appropriateness for usage in field work (4) and the volume - number of parameter ratio, which is the good indicator for determine appropriateness for usage in laboratory setting (5). According to this work, it can be seen that SPOTCHEM-D has a lower weight-turnaround time ratio and lower volume - number of parameter ratio. This means the users has to carry less workload per unit time in perform a test in field work and the analyzer takes fewer space to perform a test parameter in a limited space of laboratory. Hence, it might conclude that SPOTCHEM-D has a better fundamental performance. This study can be an example for evaluation on other new developed bench top analyzers in the future.

Received: 16 February 2010

Accepted: 22 April 2010

Address communications to: Dr Viroj Wiwanitkit, Thai POCT forum coordinator, Bangkok, Thailand

Email: wviroj@yahoo.com

Table 1. Direct cost identification comparing between SPOTCHEM D-concept and Reflotron

Item	SPOTCHEM-D concept	Reflotron
Size (mm)	408 x 330 x 103	300 x 350 x 210
Weight (kg)	5.0	5.3
Turnaround time (sec)	3	3
Number of parameter	22	17

Conflict of interest

The author is the scientific consultant to Connect Diagnostics, Thailand.

References

1. Pitt WW, Jr., Scott CD, Johnson WF, Jones G, Jr. A bench-top, automated, high-resolution analyzer for ultraviolet absorbing constituents of body fluids. Clin Chem 1970;16(8):657-61.
2. Lorenz I, Aigner M, Klee W. Investigations on the usefulness of the dry chemistry blood analysis system

SPOTCHEM SP-4410 in laboratory diagnosis of cattle. Berl Munch Tierarztl Wochenschr 2001;114(1-2):51-6.

3. Hellsing K. Evaluation of Reflotron--a system near the patient working on whole blood. Ups J Med Sci 1986;91(2):139-42.

4. Wiwanitkit V. Analysis on weight – turnaround time properties for point of care testing tool for microalbumin determination: implication for using in distanced site. Ren Fail. In press 2010.

5. Wiwanitkit V. Estimation of Clinical Chemistry laboratory workloads and laboratory workplace survey. Chula Med J 2000;(4):515-523.