Comparative Evaluation between the New BD FACS Count System and Standard BD FACS Count System by Enumeration of Absolute TCD4 Lymphocytes in Adults: Preliminary Results

Zingue D1, Hien H2, Drabo A1, Nouctara M1, Kabore A1, Ouedraogo O1 and Meda N3

1Centre Muraz, Ministry of Health/Burkina Faso, West Africa
2Institut de Recherche en Sciences de la Santé (IRSS/DRO)/Burkina Faso, West Africa
3UFR Sciences de la Santé, Université de Ouagadougou/Burkina Faso, West Africa

Abstract

Background: The purpose of this study was to evaluate the performance of the new BD FACS Count System compared to the standard BD FACS Count system for count of lymphocytes TCD4.

Methods: It was a comparative study conducted in Centre MURAZ research institute. The New BD FACS Count System dedicated to enumerate absolute and percentage of TCD4+ was compared to the standard BD FACS Count System dedicated to enumerate only absolute number of TCD4+, TCD8+, TCD3+ and the CD4/CD8 ratio. Results were analyzed by Meth Val software.

Results: The New BD FACS Count System compared favorably with the BD FACS Count System for absolute TCD4+, resulting in an overall correlation coefficient of 0.99 for the patients evaluated.

Conclusion: The New BD FACS Count System is simple to perform as the old system and was an excellent alternative method to manage adults HIV in resource limited settings.

Keywords: BD FACS count system; TCD4+ absolute; HIV; Adults; Resource limited settings; Burkina Faso

Introduction

TCD4+ cells are the target cells for human immunodeficiency virus (HIV). Patients TCD4+ levels is the most important parameter for assessing HIV progression, help to determine risk for opportunistic infections, evaluate if the patient should be placed on antiretroviral therapy (ART) and indicate also if the therapy provided is efficacy [1]. WHO/UNAIDS recommended since 2010 the use of ART treatment cut-off of less than 500 TCD4+/μl for adults and adolescents then since 2013, the limit of TCD4+ to treat has been update at ≤ 500/μl [2,3]. However, US Centers for Disease Control and Prevention (CDC) has established a treatment cut-off of TCD4+ percentage of <25% for infants under 11 months of age, <20% for children up to 3 years of age, and <15% for children between 3 and 5 years of age [4]. Conventional flow cytometry is the most accepted gold standard to enumerate absolute and percentage of TCD4+ for adults and infants HIV infection management. But, they are very expensive and complex for resource limited settings. The standard BD FACSCount™ System was developed as an alternative method and dedicated for absolute counting of TCD4+, TCD8+, TCD3+, CD4/CD8 ratio and without simultaneous percentage of lymphocyte. The new BD FACSCount™ system is dedicated to provide simultaneously absolute and percentage results of TCD4+ for adults and infants HIV management. The main study conducted by Pattanapanyasat et al. with the new BD FACSCount was observed good performance with this device in comparison with the standard BD FACSCount system for their capacity to deliver the same results of absolute TCD4+ counting.

The New BD FACS Count System is simple to perform as the old system and was an excellent alternative method to manage adults HIV in resource limited settings.

Materials and Methods

Design

A small comparative study was conducted in 2010 at Centre MURAZ to compare the standard and the new software of BD FACS Count System for their capacity to deliver the same results of absolute TCD4+ using adult’s blood. It was a study to perform an in house comparative evaluation prior to switching the new reagents and the new software of BD FACS Count System before using for routine TCD4+ counting.

Adult’s HIV-1, negative and unknown serology participants were included in the study to carry out for absolute TCD4+ and TCD4+ percentage by both two systems of BD FACSCount.

Subjects

K3EDTA venous whole blood sample were collected from 3 HIV-1 seropositive, 6 HIV seronegative and 1 unknown HIV status, and then processed for lymphocytes enumeration within 6 hours. Participant’s age was between 22 and 40 years.

Procedures

BD FACS Count System (V1.4, Becton Dickinson, San Jose, CA): standard/reference: Standard BD FACS Count System with

*Corresponding author: Zingue D, Centre Muraz, Ministry of Health/Burkina Faso, PO Box 390, Burkina Faso, West Africa, Tel: 226 20 97 01 02; Fax: 226 20 97 04 57; E-mail: zinguedezemon@yahoo.fr

Received December 13, 2013; Accepted February 04, 2014; Published February 10, 2014


Copyright: © 2014 Zingue D, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
The new software BD FACS Count system is reliable for adults HIV management in resource limited settings. But, to be performed at best because the evaluation is incomplete, the reliability and the reproducibility of the New BD FACS Count system require further evaluation in larger longitudinal studies in resource limited context based on specimens from children under the age of 5 years.

Conflicts of Interest

The authors declare no conflict of interest.

Acknowledgments

The authors thank National AIDS/STD Program for their technical assistance and implementation of the new BD FACS Count system in Burkina Faso and to make accessible the new reagents and new software of BD FACS Count System.

References

3. WHO/UN AIDS. Global update on HIV treatment 2013: Results, impact and opportunities; June 2013.
4. CDC. Guidelines for treating HIV-infected infants, children, and adolescents; including information on clinical monitoring, initiation of treatment, pediatric-specific drug information, and managing complications. 2010 rev.