S5

Bacterial Systematics: Importance and Trends

Chi Nam Seong and Keun Sik Baik

Department of Biology, Sunchon National University, Suncheon 540-742, Korea

Systematics, the scientific study of the diversity of organisms and their relationships, is a fundamental discipline that encompasses classification, nomenclature and identification. Classification is the ordering of organisms into groups (taxa); nomenclature is the assignment of the correct international scientific name to organisms; and identification is the placement of unknown strains into groups derived from classification. Sound classification is a prerequisite for stable nomenclature and accurate identification. The importance of bacterial systematics is recognized by microbial technologists searching for new products, clinical bacteriologists requiring improved identification and typing methods, and microbial ecologists monitoring the impact of the release of genetically engineered microorganisms on the indigenous microflora in natural habitats. Conventional classification based on the limited number of morphological cultural characters resulted in the overspeciation. Numerical taxonomy has been the most effective method used to establish relationships below the genus level. In essence, numerical classification involves the generation of large data bases for many organisms, which are grouped into clusters on the basis of shared similarities. Chemosystematics based on the informations from chemical analyses of whole organisms or cell fractions is used for classification and identification, and for tracing evolutionary trends. The need to reconcile traditional and molecular approaches to bacterial systematics is of vital importance. Classification and nomenclature should agree with and reflect genomic relationships as far as possible. Indeed, the integrated use of phylogenetic and phenotypic characters, that is, polyphasic taxonomy, is considered necessary for the delineation of taxa at all levels from genus to kingdom. This means that descriptions of new genera should, wherever possible, include either sequencing or hybridization data.

Key words: Bacterial systematics, chemosystematics, numerical, phylogenetic, polyphasic taxonomy

S6

The Reinvestigation of VO_2max, VT and VO_2 Plateau across 4 Protocol Durations

Byung-Kon Yoon

Yonsei University

The purpose of this study was to compare VO_2max, maximal power output, VT and presence of VO_2 plateau across 4 protocol durations during incremental cycling exercise to VO_2max. The protocol durations were approximately 5, 8, 12, and 16 minutes. Sixteen moderately to highly trained males (n=8) and female (n=8) participated in the study. The mean VO_2max in the 5-min (3.55 0.80 L/min) and 8-min (3.66 0.88 L/min) duration protocols were higher and significantly higher mean value in the 8-min duration protocol compare to 12-min (3.49 0.76 L/min) and 16-min (3.45 0.73 L/min) duration protocols. The AMPO across four protocols are significant difference. The AMPO for 5-min protocol is 12 %, 24 %, and 35 % higher than AMPO for 8-min, 12-min and 16-min protocols. The presence of plateau was 12.5 % for 5 min protocol, 56.25 % for 8 min protocol, 37.5 % for 12 min protocol, and 56.25 % for 16 min protocol. The VO_2-time slopes across four protocols were significantly different, and the mean VO_2-time slope for 16 min was significantly different compare to the mean VO_2-time slope for 5 min. However, there was no significant relationship between VO_2-time slope and VO_2max in the subjects across all four durations. The mean VO_2 values at VT across the four protocols are detected approximately 74% of VO_2max. Our data indicate that the short duration protocol (<8 min) is a valid measurement for VO_2max than optimal duration protocol (8-12 min) in moderate to highly trained individuals on the cycle ergometer.

Key words: Power output, ventilation threshold, VO_2plateau