

Hartley TF, Philcox JC, **Beesley JF**, **Robson JB**. *An on-line integrator for a plasma amino acid analyser constructed using a 12 bit analog to digital converter and a Z80 based personal computer. Journal of Food and Nutrition. 42(4):190-191,1985.*

An on-line integrator for a plasma amino acid analyser constructed using a 12 bit analog to digital converter and a Z80 based personal computer.

T.F. Hartley¹, J.C. Philcox¹, J.F. **Beesley**¹ and J.B. **Robson**¹

Institution

¹ Institute of Medical and Veterinary Science, Adelaide, S.A.

Abstract

In this study we used a Beckman Multichrom B Amino Acid Analyser fitted with a 6 mm by 300 mm column filled with Durrum DC6A resin and a 250 mins elution program using buffers A, B, C and D of the Pierce pHix Pico-Buffer System IV. The 0-100 mV output from the colorimeter's 570 nm channel was connected to a chart recorder and an integrator. The latter consisted of an Analog Devices AD522 instrumentation amplifier with a fixed gain to 10x, connected to a 12 bit A to D converter, Anaog Devices AD574, attached directly to the data bus of a Tandy TRS 80 model II BASIC Computer. Address decoding was achieved using a 74154 and the A to D conversion timing was provided by an 8253.

The first module of the computer program was written in Z80 machine code. It was responsible for setting up the 8253, the detection of a completed A to D conversion and the storage of the 12 bit data word in memory. The second module, written in BASIC, was responsible for peak detection and integration. The peak detection routine was an application of the Trigg Tracking Signal. Peak integration utilised the conventional peak height X peak width at half height method.

Data from more than fourteen plasma samples from TPN patients demonstrated that there were no significant differences between the integrator and manual methods for taurine, threonine, serine, glutamate, glutamine, glycine, alanine, valine, V2-cysteine, methionine, isoleucine, leucine, tyrosine, phenylalanine, ornithine, lysine and histidine. Automated reading of the chromatograms has been a success.