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Experiences from a Laboratory Evaluation of a Solid Phase Analytical System

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Glucochek II from Medistron, UK, was kindly supplied by Orion Diagnostica, Sweden. This reflectometer was especially constructed in order to make serial analyses possible. The test strip BG was kindly supplied by Boehringer Mannheim Scandinavia. The EDTA-blood samples used had been sent to the laboratory for routine glucose determinations.

Imprecision: Within-series (20 samples) imprecision values were in the order of 2-3 CV% within the range 5 - 15 mmol/l, but for samples with low glucose content (1.6 and 3.8 mmol/l) the imprecision was 6.6 and 9.7 CV% resp. In order to obtain these values a familiarization period for the technician was necessary.

Comparison: When 20 samples (3-12 mmol/l) were compared with two of our routine methods (Glucose dehydrogenase method on Greiner G-300 and Glucose analyser from YSI) the tested method gave a reasonable correlation but showed 20% higher values.

Time factors: The first incubation time (blood on the reagent strip, varied 10-300 s) is important. After the recommended time, 60 s, there is still an increase of colour development. After an incubation time of about 150 s a plateau is reached. The second incubation time (after blood has been wiped off, varied 10-330s) is not critical. At 60 s the reading is on a slowly decreasing slope which reaches a minimum after 2-3 min. The changes are, however, so small that even big misreadings are unimportant.

Influence of hematocrit: It has been claimed (Kutter; Schnelltest in der Klinischen Diagnostik, 1983, p. 55) that the result is inversely dependent of the hematocrit. We could confirm this observation. The decrease was, however, of the same size even using the reference method (Glucose analyser). Thus, the decrease is not dependent on the reagent strip but rather on the blood as such.