0529 COMPARISON OF BLOOD ALCOHOL LEVELS WITH BREATH ALCOHOL LEVELS MEASURED USING THE DRAGER 7110 MKIII BREATHALYZER

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Background Breathalyzers have become an indispensable tool for monitoring alcohol levels among drivers for evidential purposes. Israels traffic police, like many other countries worldwide, uses the Drager 7110 MKIII, which is correlated with blood alcohol levels at a 2100:1 partition ratio. Recent uncertainty with this association resulted in a legal standstill in the conviction of drunk drivers.

Objective To assess the correlation between breath alcohol, measured using the Drager 7110 MKIII-IL breathalyzer, and blood alcohol concentrations (BAC).

Methods Sixty-one healthy volunteers, ages 21–37 years, participated in a blinded study. Participants were administered between 0.89 and1.16 g 95% alcohol/kg body weight according

to gender mixed with juice. Breath and blood samples were taken simultaneously before and at 30-, 60- and 90-min after alcohol ingestion. Breath alcohol concentrations were measured by police officers trained in the use of the breathalyzer and under field conditions. Blood alcohol levels were determined by head-space gas chromatography technique in an accredited laboratory.

Results A total of 242 valid blood/breath tests were performed on 61 participants. The correlation coefficient between breath and blood alcohol levels was high (r=0.983). The regression equation for the prediction of breath alcohol was equal to 10.224+4.292*blood alcohol. The sensitivity and the specificity of the breathalyzer instrument were 97% and 93%, respectively. Blood to breath alcohol ratio was 1:2231242.

Conclusions The Drager 7110 MKIII IL breathalyzer was highly correlated with BAC. The results of this study were used in the Israeli courts as evidence for the reliability of the Drager 7110 MKIII breathalyzer measurement.