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ABSTRACTS OF PAPERS PRESENTED

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369. Quantitation in man of suppressive effects of fluocortolone and prednisolone by evaluation of diurnal rhythms of serum cortisol

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The fluorometric determination of serum cortisol, as described by Spencer-Peet *et al.*, was improved by the use of a recording spectrofluorometer and of an automated filling device designed to avoid bubble formation in a special cuvette. Sensitivity (<1 µg/100 ml), precision (10 µg/100 ml, $N = 20$: mean $\pm$ SD $= 10.09 \pm 0.5$), reproducibility from day to day (VK $= 6\%$) and recovery $\pm$ control serum of the method ($r = 0.99$) were assessed. The specificity is shown by the observation that serum cortisol was less than 2 µg/100 ml in adrenalectomized patients on 0.25 mg dexamethasone twice daily. The normal range of serum cortisol at 9.00 a.m. is 9.7 to 32.0 µg per 100 ml ($N = 102$, log distribution). Groups of patients ($N = 5$ to 9 each) received a single dose of fluocortolone (2.5, 5, 10, 20, 30 or 50 mg), resp. of prednisolone at 7.00 a.m. The suppressive action was analyzed by determination of the differences between the integral for the diurnal rhythm of serum cortisol of a control group ($N = 25$) and the serum cortisol integrals of patients treated with corticosteroids, each followed for 28 hr after corticosteroid administration. Thus, the differences of serum cortisol levels until the cross-over of the curves were taken as responses. Linear log dose response curves were obtained (index of precision: $g = 0.142$). This method of integral differences allows the comparison of the suppressive action of corticosteroids with different duration of action.