

THIRD
INTERNATIONAL
CONGRESS ON
HORMONAL STEROIDS

*Hamburg, Federal Republic of Germany
7-12 September 1970*

ABSTRACTS OF PAPERS PRESENTED

Editor

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EXCERPTA MEDICA FOUNDATION

10170/1104

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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 ($<1 \mu\text{g}/100 \text{ ml}$), precision ($10 \mu\text{g}/100 \text{ ml}$, $N=20$: mean \pm SD = 10.09 ± 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 $2 \mu\text{g}/100 \text{ ml}$ 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 $32.0 \mu\text{g}$ 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.