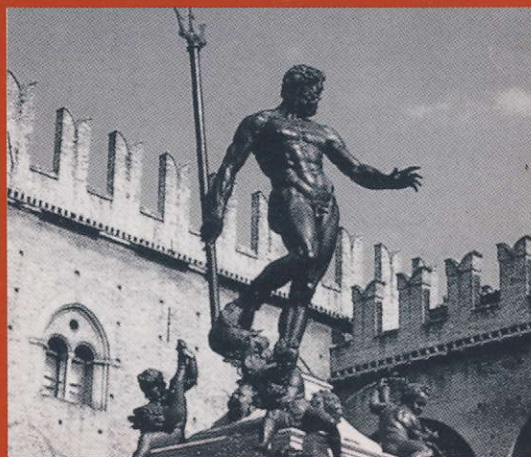


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LIGAND ASSAY 2002



8° simposio annuale ELAS-Italia
Bologna, 25-27 novembre 2002

EQA SCHEME FOR HORMONE IMMUNOASSAY: EVALUATION OF LABORATORY PERFORMANCE THROUGH A SCORING SYSTEM

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The External Quality Assessment (EQA) scheme Immunocheck for hormone immunoassay has been organised by our Institute since 1996 in co-operation with ProBioQual (Lyon, France); at present time more than 1000 laboratories are involved in the scheme which includes 18 analytes. Participants assay 18 control samples every year; statistics of the collected results are circulated sending back to the laboratories periodic and cumulative reports. To allow participants an easy evaluation of their own analytical performance, a new scoring system has been adopted. Each result is scored according to its deviation (from target value) expressed in SD units (Z-score). In detail the scores are: 4(excellent) if $Z < 0.5$, 3(good) if $0.5 < Z < 1$, 2(sufficient) if $1 < Z < 2$, 1(inadequate) if $2 < Z < 3$, -2(outlier) if $Z > 3$. The sum of scores for all samples assayed in a control cycle, normalised by the maximum achievable total score, describes the analytical performance of the laboratory.

Z-score is computed as the ratio of percent deviation from target and "state-of-the-art" imprecision. Method mean is assumed as target; state-of-the-art imprecision is computed as mean imprecision of the methods most used in the survey. To take account that imprecision depends on the analyte concentration, 3 CVs are computed corresponding to 3 concentration range. The following table reports for each analyte the concentration ranges and the state-of-the-art CVs (within-method, between-laboratories imprecision) computed from the Immunocheck data-base (results collected during 2001 EQA cycle).

	Concentration range			State-of-the-art CV		
	low	medium	high	low	mediu	high
T3 (ng/mL)	<0.9	0.9-2.0	>2.0	14.3%	9.4%	7.4%
T3free (pg/mL)	<3	3-6	>6	11.2%	7.7%	7.4%
T4 (microg/dL)	<6	6-10	>10	11.1%	8.4%	8.2%
T4free (pg/mL)	<10	10-20	>20	8.7%	6.9%	7.6%
TSH (microIU/mL)	<0.7	0.7-5	>7	8.5%	7.4%	7.2%
LH (mIU/mL)	<7	7-20	>20	8.4%	7.1%	7.2%
FSH (mIU/mL)	>15	15-25	>25	7.4%	6.9%	7.1%
HCG (mIU/mL)	<24	24-100	>100	9.8%	9.3%	7.9%
Prolactin (microIU/mL)	<200	200-600	>600	13.3%	9.0%	9.4%
Ferritin (ng/mL)	<25	25-110	>110	14.0%	11.7%	10.0%
HGH (microIU/mL)	<5	5-15	>15	20.4%	9.4%	12.6%
Insulin (microIU/mL)	<20	20-40	>40	13.8%	10.2%	11.4%
Aldosterone (pg/mL)	<90	90-220	>220	29.7%	14.6%	12.8%
Cortisol (microg/mL)	<10	10-18	>18	11.0%	9.3%	9.6%
DHEA-S (microg/mL)	<1	1-2.5	>2.5	22.9%	17.9%	17.0%
Estadiol (pg/mL)	<60	60-350	>350	26.0%	11.2%	9.7%
Progesterone (ng/mL)	<1.8	1.8-8	>8	16.9%	10.9%	8.9%
Testosterone (ng/mL)	<0.7	0.7-7.5	>7.5	29.9%	12.5%	12.3%