

Division of Laboratory Medicine

Biochemistry

Insulin-like Growth Factor 1; IGF-1

Diagnosis and monitoring of growth disorders

Pseudonyms: Somatomedin C

General information

Collection container: Serum with gel separator (Sarstedt brown top, 4.9mL adults/1.1 mL paediatrics) or Serum (Sarstedt white top, 1.2 mL paediatrics only)

Type and volume of sample: 1.0 mL whole blood is required as a minimum volume.

Specimen transport/special precautions: The tubes should be thoroughly mixed before transport to the lab.

Laboratory information

Method principle: IGF-1 is analysed on an automated instrument using a chemiluminescent immunoassay.

Biological reference ranges:

Male reference range			Female reference range		
Age (years)	Number per group	IGF-1 (µg/L)	Age (years)	Number per group	IGF-1 (µg/L)
<1 year	149	13-138	<1 year	137	16-143
1	15	18-176	1	31	19-160
2	26	23-212	2	28	22-178
3	25	28-247	3	44	25-198
4	29	34-282	4	54	29-219
5	33	40-316	5	89	34-244
6	40	46-349	6	104	39-271
7	38	53-382	7	120	45-302
8	47	60-414	8	160	52-336
9	35	68-443	9	165	59-371
10	40	75-469	10	137	67-407
11	63	83-490	11	99	75-440
12	55	90-505	12	79	82-467
13	88	96-514	13	60	89-488
14	96	101-516	14	54	94-501

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15	91	104-512	15	53	98-505
16	94	107-502	16	57	101-502
17	85	109-488	17	27	102-493
18-20	24	109-472	18	28	103-478

IGF-1 reference ranges - Tanner stage

Percentiles for IGF-I according to Tanner stages based on the Danish cohort (n=854)

		IGF-I ng/mL				
Tanner	Age range (y)	2.5%	25%	50%	75%	97.5%
Males						
I	6.1-12.9	81.3	132.5	160.0	187.9	255.3
II	8.1-14.8	106.2	212.4	276.9	331.8	432.3
III	10.9-16.0	244.9	341.2	407.2	449.0	511.4
IV	12.4-17.1	222.6	364.5	439.0	492.4	577.7
V	13.5-20.0	227.4	308.6	355.7	412.3	517.8
Females						
I	5.8-12.1	85.9	152.6	187.7	235.3	323.0
II	9.3-14.1	117.5	190.0	247.3	323.2	451.3
III	9.3-15.1	258.3	335.5	382.8	430.8	528.5
IV	11.8-16.6	224.2	339.8	378.3	437.5	585.8
V	12.5-19.9	188.2	277.4	339.1	394.9	511.6

Estimated percentiles (2.5%, 25%, 50%, 75% AND 97.5%) derived by Harrell-Davis estimate of quantiles are provided.

Source: J Clin Endocrinol Metab, May 2014, 99(5):1712-1721

Turnaround time: 2 weeks

Clinical information

Insulin-like growth factor-1 is a polypeptide containing 70 amino acids and is one of a number of insulin-like growth factors present in the circulation.

The synthesis of Insulin-like Growth Factor (IGF-1) is stimulated by growth hormone and nutritional intake. IGF-1 levels are very low at birth, rise gradually during childhood, and reach a peak during mid-puberty before beginning to decline again at 40 years.

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Almost all IGF-1 circulates bound to specific IGF binding proteins with the major protein being BP3. IGF-1 measurement is of recognised value in children with growth disorders and in the diagnosis and monitoring of acromegaly.

Factors known to significantly affect the results: Grossly haemolysed samples are unsuitable for analysis

(Last updated February 2016)