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Comparison between ARUP's Infliximab Activity and Neutralizing Antibody assay and Prometheus' Anser IFX test

ARUP's Infliximab Activity and Neutralizing Antibody assay (test code 2008320) is a cell-based bioassay that measures the ability of infliximab to inhibit TNF-alpha. The assay also detects the presence of antibodies that neutralize infliximab activity. Emergence of these neutralizing antibodies in a patient leads to treatment failure. The predicate test offered by Prometheus uses liquid chromatography to measure infliximab and antibodies that bind to infliximab. Unlike ARUP's assay, the predicate test cannot distinguish whether the antibodies neutralize drug activity or not.

In a side-by-side comparison, sera from 36 patients were tested by both assays (Table 1). The age of patients ranged from 8 to 71 years old; 23 specimens (63.8%) were from children 18 years old or younger. Eighteen patients (50%) were male; sixteen (44%) were female; and two (6%) were of unknown gender.

Figure 1 shows the correlation between infliximab values reported by the two assays. A total of 33 specimens were used in this figure (excluded were three specimens that had drug levels exceeding the reportable range in both assays). Strong correlation was observed between ARUP's Infliximab Activity assay and the Prometheus test (slope 0.96 (95% CI: 0.83 to 1.09); intercept -0.53 (95% CI: -2.20 to 1.13); correlation coefficient R = 0.93). This is remarkable considering that the two assays use different methodologies and measure different aspects of infliximab (biological activity of drug vs. drug concentration).

As mentioned earlier, ARUP's Infliximab Activity assay detects drug-neutralizing antibodies, while the Prometheus test detects drug-binding antibodies. Thus, some differences are expected in the reporting of the two tests. For instance, in the present study, there were three specimens with low levels of drug-binding antibodies according to the Anser IFX test (12, 30, and 36), but only one of those specimens (12) had neutralizing antibodies based on the ARUP test. No neutralizing antibodies were found in the other two specimens (i.e., they were below the cutoff titer of 1:20). The Prometheus test has been reported to be more sensitive for detection of antibodies to infliximab. This is due to the ability of this assay to detect binding antibodies that can be either neutralizing or non-neutralizing of infliximab activity in vivo. ARUP's assay, on the other hand, is more specific for the detection of antibodies that neutralize the activity of infliximab in vivo. Despite these analytical performance differences, the use of current assays results in similar classification and interventions in individuals with treatment failure to infliximab.

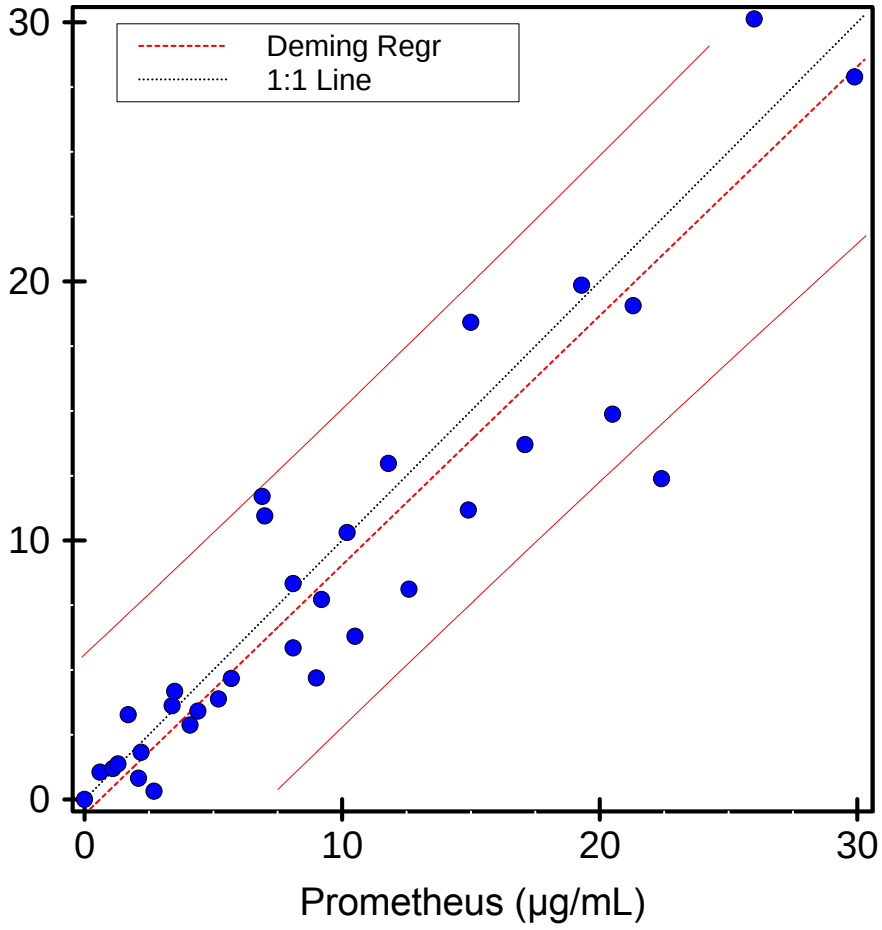
In conclusion, ARUP's Infliximab Activity assay is comparable with the Prometheus test for the evaluation of patients with treatment failure to infliximab.

Table 1. Infliximab and anti-infliximab antibody measurements comparison

Validation Specimen	Patient Age	Patient Gender	ARUP Infliximab Activity (ug/mL)	Prometheus Infliximab Concentration (ug/mL)	ARUP Infliximab Neutralizing Antibody Titer	Prometheus Antibody Concentration (u/mL)
Validation 1	19	F	8.12	12.6	<1:20	<3.1
Validation 2	17	M	3.41	4.4	<1:20	<3.1
Validation 3	18	M	11.70	6.9	<1:20	<3.1
Validation 4	27	M	30.13	26	<1:20	<3.1
Validation 5	15	M	10.30	10.2	<1:20	<3.1
Validation 6	44	F	39.56	>34.0	<1:20	<3.1
Validation 7	42	M	0.82	2.1	<1:20	<3.1
Validation 8	32	M	19.06	21.3	<1:20	<3.1
Validation 9	70	F	5.85	8.1	<1:20	<3.1
Validation 10	16	U	4.67	5.7	<1:20	<3.1
Validation 11	33	F	>40	>34.0	<1:20	<3.1
Validation 12	13	F	<0.64	<1.0	1:26	8.3
Validation 13	18	M	8.33	8.1	<1:20	<3.1
Validation 14	59	M	<0.64	2.7	<1:20	<3.1
Validation 15	26	M	10.94	7	<1:20	<3.1
Validation 16	47	F	13.70	17.1	<1:20	<3.1
Validation 17	13	F	1.19	1.1	<1:20	<3.1
Validation 18	16	F	1.82	2.2	<1:20	<3.1
Validation 19	16	F	27.89	29.9	<1:20	<3.1
Validation 20	40	U	14.87	20.5	<1:20	<3.1
Validation 21	16	F	7.72	9.2	<1:20	<3.1
Validation 22	22	M	3.27	1.7	<1:20	<3.1
Validation 23	71	F	3.62	3.4	<1:20	<3.1
Validation 24	13	M	3.88	5.2	<1:20	<3.1
Validation 25	11	F	>40	>34.0	<1:20	<3.1
Validation 26	13	F	18.42	15	<1:20	<3.1
Validation 27	17	M	2.87	4.1	<1:20	<3.1
Validation 28	8	F	1.05	<1.0	<1:20	<3.1
Validation 29	11	M	4.69	9.0	<1:20	<3.1
Validation 30	17	M	12.97	11.8	<1:20	8.3
Validation 31	15	F	4.17	3.5	<1:20	<3.1
Validation 32	13	M	1.37	1.3	<1:20	<3.1
Validation 33	15	M	12.38	22.4	<1:20	<3.1
Validation 34	16	F	11.17	14.9	<1:20	<3.1
Validation 35	10	M	19.85	19.3	<1:20	<3.1
Validation 36	17	M	6.30	10.5	<1:20	10.9

Figure 1. Correlation of infliximab concentration between ARUP and predicate methods

Slope 0.96 (95% CI: 0.83 to 1.09); intercept -0.53(95% CI: -2.19 to 1.13); correlation coefficient R = 0.93



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