

QUANTIFICATION OF PLASMA HDV RNA IN UNTREATED AND BULEVIRTIDE-TREATED PATIENTS WITH CHD: A COMPARISON BETWEEN ROBOGENE 2.0, EUROBIOPLEX AND ALTOSTAR

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Introduction/Summary

Accurate HDV-RNA quantification is crucial for diagnosis and management of chronic hepatitis Delta (CHD), yet a significant variability between assays exists. We compared three methods to quantify HDV-RNA levels in untreated and Bulevirtide (BLV)-treated CHD patients.

Methods

Frozen plasma from untreated and BLV-treated CHD patients were tested in a single-center retrospective study by 3 different assays:

- Robogene HDV-RNA Quantification Kit 2.0 (Roboscreen GmbH; LOD 6 IU/mL on 7500 Fast Real-Time PCR System [Applied Biosystem])

- EurobioPlex HDV PCR quantitative (Eurobio Scientific, LOD 100 IU/mL) on CFX96™ real-time PCR detection system [Bio-Rad]

- AltoStar HDV RT-PCR RUO Kit 1.5 (Altona Diagnostics, estimated LOD <10 IU/mL) on the AltoStar@AM16

Results

Overall, 431 plasma samples from 130 CHD (69 untreated and 61 BLV-treated) patients were studied, whose characteristics are shown in **Table 1**

Median HDV-RNA were higher with Robogene than EurobioPlex [3.78 (0.70-7.99) vs. 4.69 (2.00-8.19) Log IU/mL, $p < 0.0001$] (**Table 2**).

Table 1. Demographic, clinical and virological features of the 130 CHD patients enrolled

Variables	Patients (n=130)
Age, years	52 (23-77)
Males	69 (53%)
European origin	118 (91%)
HDV genotype 1	111 (97%)
Compensated cirrhosis	82 (63%)
Ongoing NUC treatment	98 (75%)
Previous PegIFN α treatment	63 (49%)
AST, U/l	52 (16-592)
ALT, U/l	70 (6-743)
HBV DNA undetectable	95 (73%)
qHBsAg, LogIU/ml	3.8 (0.3-4.6)
HBeAg negative	114 (88%)

Values are expressed as number (percentage), median (range);

CHD, Chronic Hepatitis Delta; NUC, Nucleos(t)ide analogue; PegIFN α , Pegylated Interferon Alpha, AST, Aspartate Aminotransferase; ALT: Alanine Aminotransferase; qHBsAg, quantitative Hepatitis B surface Antigen; HBeAg, Hepatitis B e Antigen

Conclusion

HDV-RNA levels quantified by EurobioPlex and Altostar were 1 and 0.5 logs higher than Robogene 2.0, respectively. HDV-RNA undetectability rates during BLV treatment were assay-dependent.

References

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- Bremer B, et al. Automated nucleic acid isolation methods for HDV viral load quantification can lead to viral load underestimation. *Antivir Ther.* 2019;24(2):117-123
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Results (Continued)

Table 2. Median HDV RNA levels according to HDV assays and treatment status

HDV RNA, Log IU/mL	n°	Robogene	EurobioPlex	p value	n°	Robogene	AltoStar	p value
Overall	232	3.78 (0.70-7.99)	4.69 (2.00-8.19)	<0.0001	244	3.32 (0.70-7.37)	3.91 (0.19-7.54)	<0.0001
Untreated patients*	109	4.75 (0.70-7.99)	5.59 (2.00-8.19)	<0.0001	47	5.11 (2.42-7.37)	5.63 (2.79-7.54)	<0.0001
BLV-treated patients	123	2.59 (0.70-6.44)	3.11 (2.00-8.04)	<0.0001	197	2.75 (0.70-6.80)	3.40 (0.19-7.41)	<0.0001

*Included baseline samples from BLV-treated patients for Robogene vs. EurobioPlex, only baseline samples from BLV-treated patients for Robogene vs. AltoStar. Results are reported as number (percentage) or median (range).

Compared to Robogene 2.0, EurobioPlex reported similar HDV-RNA ($\Delta \pm 0.5$ Log) in 66 (28%) patients but higher >0.5 Log in 160 (69%) (**Figure 1**). Viremia was lower with Robogene than AltoStar [3.32 (0.70-7.37) vs. 3.91 (0.19-7.54) Log IU/mL, $p < 0.0001$] (**Table 2**). AltoStar reported HDV-RNA levels >0.5 Log in 127 (52%) (**Figure 1**).

Figure 1. Correlation between HDV RNA levels by different assays.

Panels A-B: Robogene vs. EurobioPlex; Panels C-D: Robogene vs. AltoStar

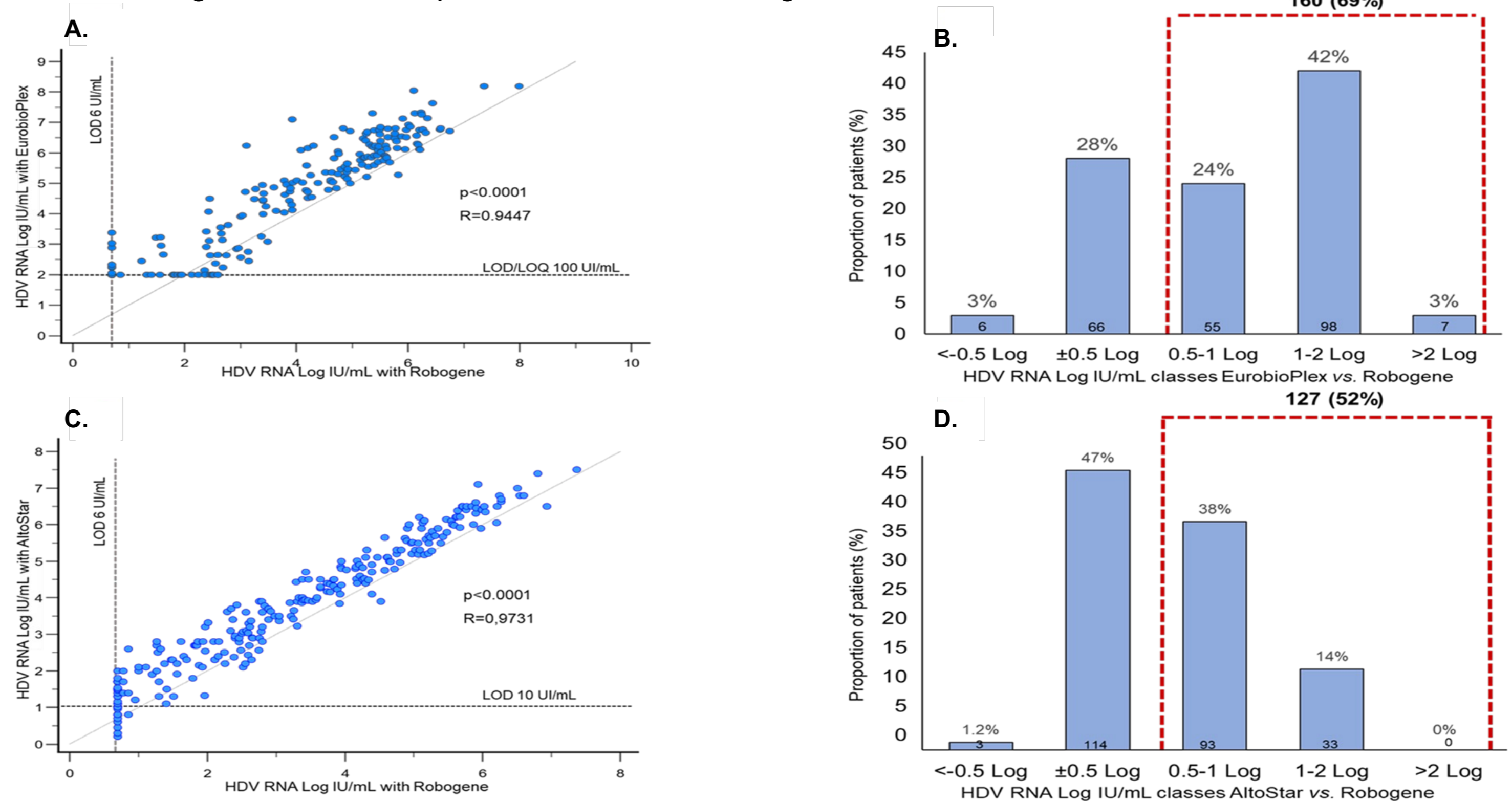
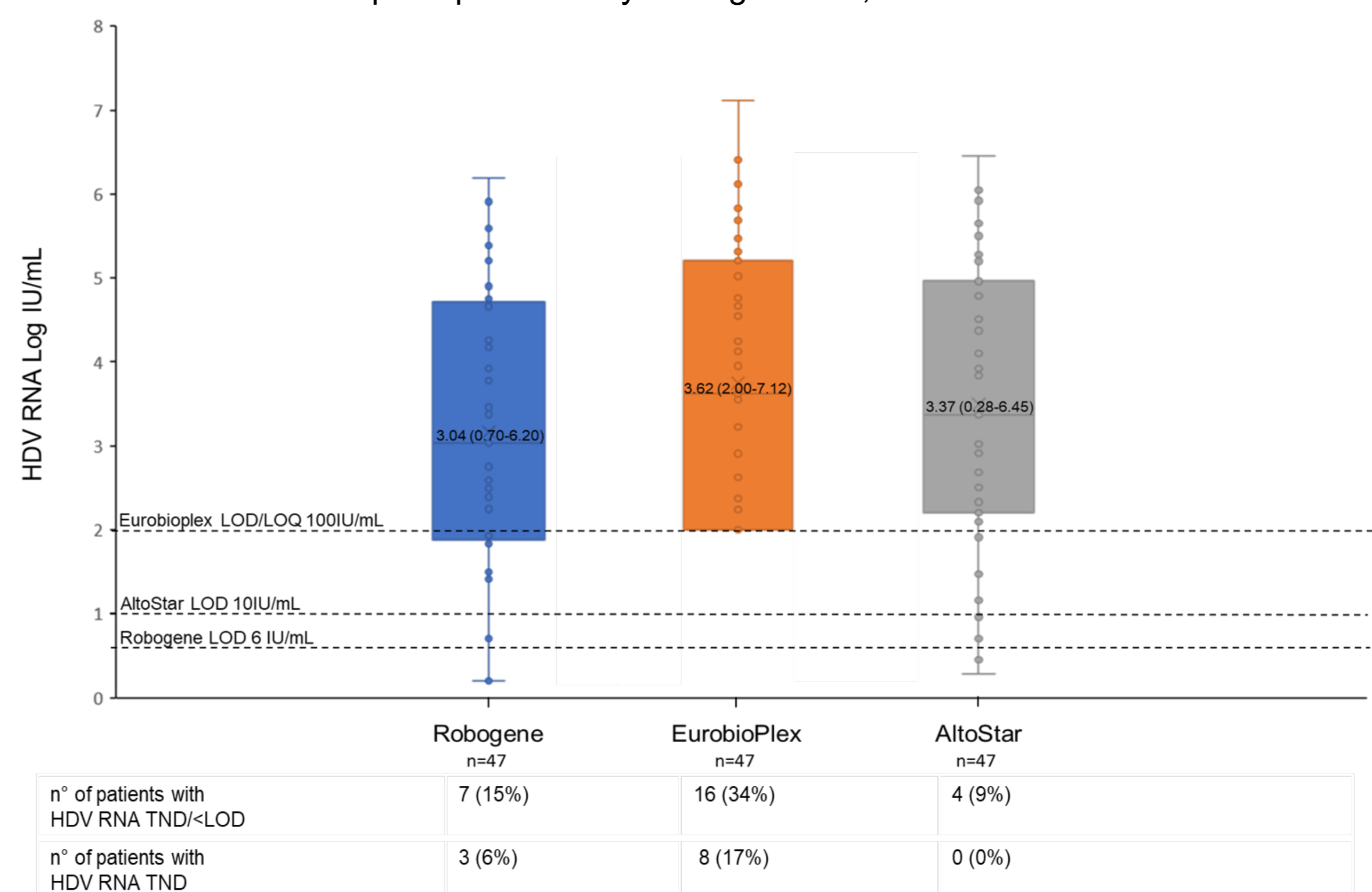


Figure 2. HDV RNA levels in 47 samples quantified by Robogene 2.0, EurobioPlex and AltoStar



Although virological response rates (≥ 2 log decline vs. baseline) at week 24 (Robogene 2.0 vs. EurobioPlex and AltoStar) and 48 (Robogene 2.0 vs. AltoStar) were similar across assays, rates of HDV RNA undetectability significantly differed between the three assays at week 24 and 72 ($p = 0.003$ and $p = 0.02$) (**Figure 2**).