Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

	% of Pts with	Cirrhosis		Splenomegaly		Varices	
Test	Abnl Test	T-Stat	P	T-Stat	P	T-Stat	P
CA Cloral	70%	7.74	0.0000	3.32	0.0010	3.97	0.0001
PHM	65%	6.92	0.0000	3.93	0.0002	4.95	0.0000
CA Shunt	75%	-6.73	0.0000	-3.65	0.0003	- 3.81	0.0002
Caf kelim	48%	3.78	0.0002	2.33	0.0207	1.09	NS
AP kelim	82%	3.61	0.0004	2.56	0.0116	2.09	0.0399
MBT Score	67%	2.87	0.0046	3.46	0.0007	2.43	0.0169
CA kelim	38%	2.86	0.0047	1.25	NS	2.36	0.0195
Gal Elim	73%	2.58	0.0106	3.87	0.0001	2.28	0.0240
AP CI	58%	2.44	0.0160	1.37	NS	1.84	NS
MEGX15min	75%	1.33	NS	1.91	0.0572	1.88	NS
MEGX30min	67%	1.01	NS	1.77	NS	1.01	NS

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RIBAVIRIN COUPLED TO HEMOGLOBIN PROTECTS AGAINST VIRAL HEPATITIS INDUCED BY THE CORONAVIRUS MHV-3 IN MICE. *Gary A Levy, Anand Ghanekar, Ian McGilvray, Toronto General Hospital, Toronto, ON, Canada; Nancy F Ng, Hemosol Research Corporation, Mississauga, ON, Canada; Adam Levy, Laisum Fung, M J Phillips, Toronto General Hospital, Toronto, ON, Canada; Pieter Biessels, Caroline Woods, Gord Adamson, David N Bell, Hemosol Research Corporation, Mississauga, ON, Canada*

Background: Side effects of interferon-ribavirin combination therapy limit the sustained viral response achievable in a given HCV patient population. Furthermore, it has been suggested that higher ribavirin doses and longer treatment duration are required to achieve a sustained response rate in patients with genotype 1. Coupling of ribavirin to hemoglobin offers the potential of a therapeutic with improved safety and efficacy by targeting the delivery of ribavirin to key tissues infected by viral infections such as HCV. These tissues include liver parenchymal cells and macrophages, both of which possess receptors for binding and internalization of hemoglobin-haptoglobin complexes as part of the natural clearance pathway for cell-free hemoglobin. Hemoglobin thus serves as a natural drug carrier for targeted therapy of such receptor-bearing tissues. Aim: To evaluate the effect of a ribavirin-hemoglobin conjugate (RBV-Hb, HRC 203) in a mouse model of viral hepatitis induced by the coronavirus, MHV-3. Methods: Ribavirin was covalently coupled to highly purified hemoglobin HbAo at a mean molar drug ratio of 8:1 (ribavirin:hemoglobin). The RBV-Hb was evaluated for retention of haptoglobin binding and cellular uptake *in vitro*, as well as the ability to recover bioactive ribavirin following enzymatic cleavage from RBV-Hb. The RBV-Hb was complexed to haptoglobin prior to administration to MHV-3 infected Balb/c mice, and carried one-third of the drug dose that was used for the Ribavirin group. The RBV-Hb-treated group was compared to control infected untreated and Ribavirin-treated groups for survival, clinical behavior, viral titer, biochemistry and liver histopathology. Results: RBV-Hb was specifically internalized by cultured human and mouse hepatic cells but not by control non-hepatic cells. Ribavirin enzymatically cleaved from RBV-Hb retained *in vitro* bioactivity similar to unmodified ribavirin. Untreated and MHV-3 infected mice all developed clinical and biochemical signs of acute viral hepatitis and died by day 4 post infection (ALT_{max} 7000 IU/L). Livers recovered from untreated and infected mice showed greater than 90% necrosis. In contrast, survival was enhanced in both Ribavirin and RBV-Hb treated and MHV-3 infected mice with a marked reduction in biochemical (ALT_{max} 1000 IU/L) and histologic evidence of hepatic necrosis (<10%). Clinically, RBV-Hb treated mice behaved normally at all time points, in contrast to Ribavirin treated mice which developed lethargy and abnormal fur texture compatible with drug toxicity or ongoing viral infection. Conclusions: In this study, a beneficial effect of RBV-Hb was shown on the course of MHV-3 infection as demonstrated by prolonged survival, improved clinical behavior, and a reduction in biochemical and histologic disease. The study provides a rationale for additional studies to examine the mechanism for the beneficial effect. (Support provided by Hemosol, Inc.)

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