BIOLOGICAL CONSULTING SERVICES
OF NORTH FLORIDA, INC.

September 02, 2020

[redacted]

Client ID (Test Substance): HydraZorb HZ200813 Solution

BCS ID: 2008203

Project Name: DMC 08142020 HydraZorb Solution's Poliovirus & Coronavirus OC43 Virus Reduction Efficacy

We have completed the disinfection efficacy study on the submitted units/materials as outlined in the report notes. The contaminant species, study conditions, and parameters utilized were based on client's request and adaptation of the guidance documents and protocols listed below:

Validation of virucidal efficacy of supplied solution by spray application: Performance efficacy as per disinfection protocol; BCS SOP-D1 (ISO17025:2017 Accredited) and ASTM E1053.

Following, you will find our report of the study conducted on the referenced samples. Should you have any questions, please do not hesitate to contact me.

Sincerely,

George Lukasik, Ph.D.
Laboratory Director

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Analysis: *Human Coronavirus OC43 (ATCC: VR-1558) Reduction Efficacy*			Test Carrier: 25mm^2 glass
Application Method: Fine mist spray until saturated			BCS Sample ID: 2008203
Conformance of Study Control Data:	Negative Control: Yes	Positive Control:Yes	Neutralizer Control:Yes
Untreated Control Recovery*: 2.30E+05 IU/Carrier	Contact Time: 10 minutes		Temp.:20.8 C
Challenge Study Analyst: George Lukasik, Ph.D.		Challenge Start Date: 08/20/2020	

Test Replicate #1	Client ID: HydraZorb HZ200813 Solution			Qualifier:	None
End Conc.**: 1.10E+03	IU/Carrier	% Reduct.:	99.5	Log10 Reduct.:	2.3
Test Replicate #2				Qualifier:	None
End Conc.**:7.90E+03	IU/Carrier	% Reduct.:	96.6	Log10 Reduct.:	1.5
Test Replicate #3				Qualifier:	None
End Conc.**:7.90E+03	IU/Carrier	% Reduct.:	96.6	Log10 Reduct.:	1.5

Analysis Method: Cell Culture Infectivity Analyst:George Lukasik, Ph.D. Analysis Date: 08/20/2020

Sample Notes: Concentrations are presented as the Most Probable Number (MPN) of virus Infectious Units (IU) recovered per carrier. Inoculum added per carrier = 1.65E+06 infectious units

*Represents the average recovery from inoculated carriers not exposed to test substance; carriers were treated with phosphate buffered saline and served as recovery controls.
**Represents the average recovery from inoculated carriers treated by study sponsor's test substance following the indicated contact time

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Analysis: *Human Poliovirus I (ATCC: VR-1562) Reduction Efficacy*			Test Carrier: 25mm^2 glass
Application Method: Fine mist spray until saturated			BCS Sample ID: 2008203
Conformance of Study Control Data:	Negative Control:	Positive Control:	Neutralizer Control: Yes
Untreated Control Recovery*: 1.11E+06 IU/Carrier		Contact Time: 10 minutes	Temp.:20.8 C
Challenge Study Analyst: George Lukasik, Ph.D.		Challenge Start Date: 08/20/2020	

Test Replicate #1	Client ID: HydraZorb HZ200813 Solution			Qualifier:	None
End Conc.**: 5.40E+04 IU/Carrier		% Reduct.:	95.1	Log10 Reduct.:	1.3
Test Replicate #2				Qualifier:	None
End Conc.**:9.20E+04 IU/Carrier		% Reduct.:	91.7	Log10 Reduct.:	1.1
Test Replicate #3				Qualifier:	None
End Conc.**:3.50E+04 IU/Carrier		% Reduct.:	96.9	Log10 Reduct.:	1.5

Analysis Method: Cell Culture Infectivity Analyst:George Lukasik, Ph.D. Analysis Date: 08/20/2020

Sample Notes: Concentrations are presented as the Most Probable Number (MPN) of virus Infectious Units (IU) recovered per carrier. Inoculum added per carrier = 3.95E+06 infectious units

*Represents the average recovery from inoculated carriers not exposed to test substance; carriers were treated with phosphate buffered saline and served as recovery controls.

**Represents the average recovery from inoculated carrier treated by study sponsor's test substance following the indicated contact time

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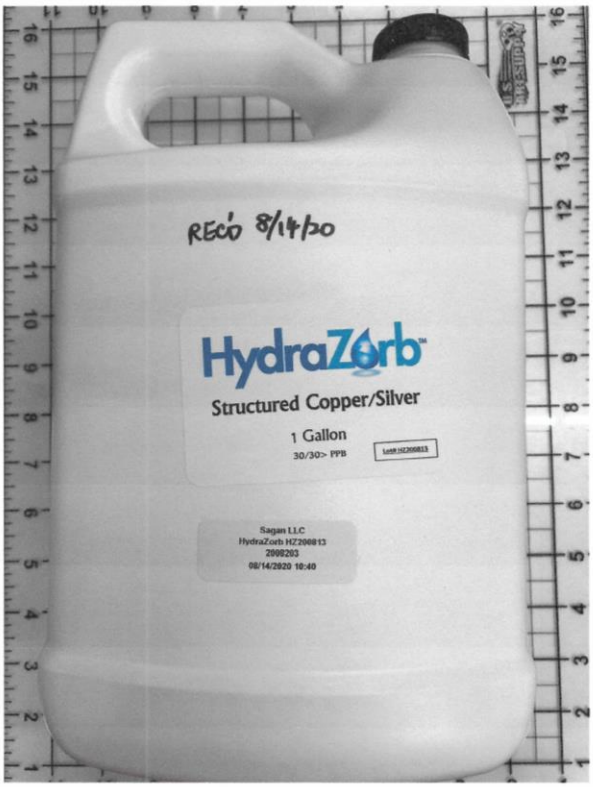

Study Sponsor's Provided Test Substance

BCS LABORATORIES, INC. – GAINESVILLE
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Project: DMC 08142020 HydraZorb Solution Poliovirus & Coronavirus OC43 Virus Reduction

Date Received: August 14, 2020 09:45

Study Start Date: August 20, 2020 Study End Date: September 02, 2020

Report Notes:

The test substance consisted of a clear solution in a white container labeled HydraZorb. It was received from the study sponsor and was assigned the referenced BCS identifier number. The study was performed to evaluate the provided solution's virucidal efficacy. The virucidal efficacy was evaluated using human Coronavirus OC43 (ATCC: VR-1558) and Poliovirus 1 (ATCC VR-1562) inoculated onto glass 25mm^2 carriers. The study was conducted as per laboratory protocol and guidance from ASTM E1053: Standard Practice to Assess Virucidal Activity of Chemicals Intended for Disinfection of Inanimate, Nonporous Environmental Surfaces. Briefly, fifty micro-liters of Coronavirus OC43 suspension (containing 5% heat inactivated Fetal Bovine Serum) was added to each carrier and allowed to dry. The inoculation was added as a thin layer. Concurrently, the provided solution was placed in a fine mist sprayer. The carriers were then each sprayed five times with a fine mist of solution until thoroughly saturated. Following the 10 minute contact time, the carriers were immediately added to sterile containers with 10mL of D/E Neutralizing Broth and homogenized. The samples were analyzed for viable infectious Coronavirus on the day of the study at undiluted and at serial ten-fold dilutions in replicates of five. Additionally, two carriers were inoculated as above but were not exposed to test substance. Rather, they were sprayed similarly with Phosphate Buffered Saline and were processed similarly as the test substance treated carriers. These served as recovery controls. The number of microorganisms recovered from the controls was used to calculate the starting concentration. Positive, negative and neutralization controls were performed along with test subjects to provide quality control and reference data as per laboratory standard accredited ISO17025:2017 methodology. The described study was repeated using Poliovirus. Viable virus was analyzed using cell infectivity assay; HRT-18G ileocecal colorectal adenocarcinoma cells were used for the Coronavirus assay and Buffalo Green Monkey (BGM) kidney cells were used for the Poliovirus assay. Cell monolayers were monitored for cytopathic effect development over a 14-day period. Viruses were enumerated as Infectious Units (I.U.) using the Most Probably Number (MPN) analysis of the cell culture results. Analysis was conducted as per method EPA/600/R-95/178 and reported as I.U./Carrier section. All equipment and supplies were validated to or were calibrated to NIST traceable standards. All QC were within method acceptance limit. No general environmental conditions are specified in the standard or have been identified that could affect the test results or measurements. End of Report Notes.

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*I certify that I have examined and I am familiar with the information submitted herein. The results pertain only to the sample(s) analyzed and associated identifier #(s). Based on my inquiry of the individuals responsible for the analysis, I believe the data to be true, accurate, and complete. Unit descriptions and names were obtained from the submitted documents. The analysis was authorized and commissioned by the client or client's representative. The resulting data are representative of the analysis conducted on the collected samples and its/their condition at the time of analysis. The data provided is strictly representative of the study conducted under laboratory conditions using the material/samples/articles provided by the client (or client's representative) and its (their) condition at the time of test. The data obtained may not be representative or indicative of a real-life process and/or application. The sample(s) were analyzed in accordance with the appropriate method, however due to the inherent limitations of methods, microorganisms may avoid detection. BCS Laboratories offers no express or implied warranties concerning the quality, safety, and/or purity of any sample, batch, source, or the process they are derived from. Quality assurance controls were performed as outlined in the method and as per Good Laboratory Practices. Analyses were performed in accordance with laboratory practices and procedures set-forth by ISO 17025-2017 and NELAP/TNI accreditation standards unless otherwise noted. BCS makes no express or implied warranty regarding the ownership, merchantability, safety or fitness for a particular purpose of any such property or product.

Signature of Laboratory Director/Authorized Rep. _____ Date: July 19, 2020

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DATA QUALIFIER CODES	
SYMBOL	MEANING
D	Measurement was made in the field.
I	The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
J1	The sample matrix interfered with the ability to make any accurate determination.
J2	No Quality Control criteria exist for the component.
^	analysis conducted outside the Laboratory's scope of accreditation
L	Off scale high. Actual value is known to be greater than value given.
O	Sampled, but analysis not performed.
Q	Sample held beyond the accepted holding time.
U	Indicates that the compound was analyzed for but not detected. The reported value is the method detection limit.
V	Analyte was detected in both sample and associated method blank. Data may not be accurate.
Y	The laboratory analysis was from an improperly preserved sample. The data may not be accurate.
Z	Too many colonies present (TNTC); the numeric value given represents the upper end of the value that can be determined based on the volume.
?	Data are rejected and should not be used. QC data did not meet acceptance criteria.
**	Analysis of analyte submitted to an accredited sub-contract laboratory.
!	Data deviate from historically established concentration range.
#	BCS Lab specific qualifier. See laboratory analysis notes.

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