2021

medicina

BUENOS AIRES Vol. 81 Supl. III - 2021

MEDICINA

Volumen 81, Supl. III, Págs. 1- 250

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BUENOS AIRES, VOL. 81 Supl. III - 2021

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MEDICINA (Buenos Aires) - Revista bimestral – ISSN 1669-9106 (En línea)

Registro de la Propiedad Intelectual N° 02683675
Personería Jurídica N° C-7497
Publicación de la Fundación Revista Medicina (Buenos Aires) Propietario de la publicación: Fundación Revista Medicina
Queda hecho el depósito que establece la Ley 11723

Publicada con el apoyo del Ministerio de Ciencia, Tecnología e Innovación Productiva.
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Aparece en *MEDLINE (PubMed), ISI-THOMSON REUTERS (Journal Citation Report, Current Contents, Biological Abstracts, Biosis, Life Sciences), CABI (Global Health), ELSEVIER (Scopus, Embase, Excerpta Medica), SciELO, LATINDEX, BVS* (Biblioteca Virtual en Salud), *DOAJ, Google Scholar y Google Books.*
Incluida en el Núcleo Básico de Revistas Científicas Argentinas del CONICET.

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e-mail: revmedbuenosaires@gmail.com – http//: www.medicinabuenosaires.com

Vol. 81, Supl. III, Noviembre 2021

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cells is recognized by CE and others parasitosis patient's sera, that could mean a marker for specific stages in the development of some parasitosis.

161. (459) **HIGUCHI ALGORITHM ANALYSIS OF COVID-19 OCCURRENCE FREQUENCY FOR PREDICTIVE PURPOSES IN THE ARGENTINE REPUBLIC, SANTA FE PROVINCE AND ROSARIO CITY**

Delfina Carla Merolli1,3, Fabricio Nazareno Trabachino1,3, Juan Ignacio Vansteenkiste1,2,3 Azul María Milacher1,3, Priscila Ornella Roth1,3, Pablo Oliveto Hernández1,3,María Florencia Mattalia1,3, Valeria Codina Baudena1,3, Leandro, Joaquín Giordana3, Guillermo Ángel Grigioni2,3, Juan Pablo Trabachino3, Franco Facciuto1,3, Damián Lerman Tenenbaum3, María Eugenia Cabral1,3, & Jorge Luis Molinas2,3.
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COVID-19 temporal occurrence frequency would reproduce a fractal rhythm. This behavior can be analyzed by mathematical algorithms that determine the Fractal Dimension (FD) and the predictive determination coefficient (R^2). FD would express virus temporal repetition and R^2 would express response capacity to environment demands, its value ranges between 0 and 1, greater than 0.5 would indicate persistence of the system. The aim of this work was to analyze temporal distribution of COVID-19 using Higuchi Algorithm (HA) for predictive purposes in the Argentine Republic (AR), Santa Fe Province (SFP) and Rosario City (RC) according to the epidemiological week (EW). Observational, longitudinal and prospective study. COVID-19 positive cases (PC) were considered by testing (nasopharyngeal swab-PCR) according to daily reports from the Ministry of Health, from the first PC in EW 10 and 11 (2020) to EW 32 (2021). HA was applied by EW. Median (M) and standard deviation (±) were obtained from FD and R^2, and Pearson's correlation coefficient (r) between FD and R^2 according to the territory. Results: FD (AR): M=2.47±0.36, R^2 (AR): M=0.96±0.03; FD (SFP): M=1.7±0.44, R^2 (SFP): M=0.74±0.13; FD (RC): M=1.63±0.45, R^2 (RC): M=0.72±0.14. Correlation for AR: r=0.37 ($p<0.17$), SFP: r=0.89 ($p<0.0001$) and RC: r=0.74 ($p<0.0015$). Conclusion: COVID-19 behavior in AR shows a growing and sustained temporal manifestation, and interaction system-environment, while SFP and RC have found limitations of environment interaction. COVID-19 could be sustained for a longer time in the AR regarding SFP and CR if the current conditions are maintained. AR PC decrease would not be accompanied by a fall off in the adaptation capacity of COVID-19 to the environment, that would not occur in SFP and RC. This conduct requires studying the impact of sanitary measures.

162. (508) **EPIDEMIOLOGICAL SURVEILLLANCE OF SARS-COV-2 OCURRENCE IN WASTEWATER FROM GRAN SAN MIGUEL DE TUCUMÁN, ARGENTINA**

María Cecilia D'Arpino[1], Augusto Bellomio[2], Lucila Saavedra[3], Pedro Eugenio Sinelli[4], Lorena Noelia Sendin[5], Adler Conrado[2], Elvira M. Hebert[3], Julieta Migliavacca J[5], Sabrina Gerstenfeld[6], Roxana Chahla[5], Virginia Helena Albarracín[1].
1.CIME-CONICET-UNT, 2.INSIBIO-CONICET-UNT, 3.CERELA-CONICET, 4.PROIMI-CONICET, 5.Itanoa, Instituto de tecnología agroindustrial del noroeste argentino (CONICET-EEAOC), 6SIPROSA, Ministerio de salud, gobierno de Tucumán.

The ongoing global pandemic of coronavirus disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has been a public health emergency of international concern. SARS-CoV-2 is a member of the Coronaviridae family, consisting of a group of enveloped viruses with single-stranded RNA genomes which cause diseases ranging from common colds to acute respiratory distress syndrome. Although the main transmission routes for SARS-CoV-2 are the inhalation of aerosols/droplets and person-to-person contact, current evidence available indicates that the viral RNA is present in wastewater, suggesting the need to better understand this route as a potential source of epidemiological data and human health risks. To this aim, 32 sewage samples were collected between May and June 2020 from wastewater in the cities of San Miguel de Tucumán and Yerba Buena, Argentina. Before viral concentration, composite samples were heat inactivated to increase handling safety. Next, wastewater samples (200 ml) were mixed with polyethylene glycol (PEG) and NaCl. Mixtures were left to stand overnight at 4 °C. Subsequently, they were centrifuged, and pellets were resuspended in TRIZOL. The extraction of viral RNA was executed using the PURO VIRUS KIT (Productos BIO-Lógicos). A real-time RT-qPCR assay targeting the N gene, using SARS-CoV-2 specific primer and probes set, was performed. RT-qPCR mix was prepared using qScript XLT 1-Step RT-PCR (Quantabio) in a one-step system. While 6 out of 16 samples collected in May were positive, 8 out of 16 from June turned out positive. Interestingly, the increase in positive samples correlates with the increase in the number of human cases detected, further supporting wastewater-based epidemiology as a sensitive tool to study spatial and temporal trends of virus circulation in the population.

163. (539) **ASSESSMENT OF SHIGA TOXIN PRODUCING *ESCHERICHIA COLI* O157:H7 PATHOGENICITY IN THE PRESENCE OF SHORT CHAIN FATTY ACIDS AND LACTATE**

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Laboratorio de Patogénesis de Procesos Infecciosos, IMEX-CONICET-ANM, Bs As, Argentina.

Shiga toxin (Stx)-producing *Escherichia coli* (STEC) O157:H7 is a foodborne pathogen, which can lead to the life-threatening Hemolytic Uremic Syndrome (HUS). There is no treatment available in order to reduce HUS outcome up to date. Short chain fatty acids (SCFAs), including acetate (A) and butyrate (B), are produced by the intestinal microbiota. Lactate (L) is the main metabolite of many fermented products. A, B and L can protect mucosa exposed to inflammatory insults. The aim of this work was to evaluate the effects of A, B and L on modulating STEC pathogenicity. We evaluated the inhibition of STEC growth after 3h culture, EspB production by SDS-PAGE and bacterial adherence to Caco-2 cells. We found that 50 mM of A and B, and 100 mM of the three compounds inhibited bacterial growth significantly compared to control: 0;1;10;50 and 100mM (median CFU(IQR) $x10^9$) A=2.2(1.8-2.7);2.3(2.0-2.6);2.2(1.8-2.4);1.4(1.2-2.0);1.1(0.5-2.0);B=2.1(1.9-2.3);1.9(1.8-2.2);1.6(1.5-2.0);1.3(1.0-1.4);0.5(0.4-1.0);L= 2.1(1.7-2.5);2.3(1.6-2.6);1.7(1.5-2.1);1.6(1.5-1.9);1.1(1.0-1.5); $p<0.001$, K W test. Then we evaluated if those concentrations that did not inhibit STEC growth had an effect on the expression of EspB, a protein from type three secretion system that is involved in bacterial adhesion to intestinal epithelial cells. We did not observe differences on EspB expression by SDS-PAGE. However, we observed a significantly reduced percentage of bacterial adherence to Caco-2 cells in the presence of A and B 1mM compared to control media (median%(IQR): Media=81(69-87); A1=13(12-18);A10=35(17-75);B1=8(6-9);B10=52(29-52);L1=52(35-52);L10=35(35-40);$p<0.05$, K W test.
In conclusion, acetate and butyrate were able to reduce bacterial adherence to Caco-2 cells in concentrations that do not inhibit bacterial growth. Since gut colonization is the first step in STEC pathogenesis, it could be interesting to examine the mechanisms involved in the inhibition of bacterial adherence to epithelial cells.

164. (554) **INCREASED PRESENCE OF PROCALCITONIN DURING PULMONARY TUBERCULOSIS. ITS RELATIONSHIP WITH DISEASE SEVERITY, AND DIABETES COMORBIDITY**

Estefanía Massa[1], Georgina Gallucci[1], Ariana Díaz[1,2], Diego Bertola[2,3], Marisa Derio[1], Oscar Bottasso[1,2], Luciano D'Attilio[1,2], Bettina Bongiovanni[1], María Luisa Bay[1,2].
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