15 April 2010

This supplement has been prepared to present scientific and technical news items that may be of more interest to technical personnel at RDT&E activities and the labs, or the medics rather than the broader readership of the basic CB Daily. Due to the nature of the material, the articles, if available online, are usually only available through subscription services thus making specific links generally unavailable. Thus, usually only the bibliographic citation is available for use by an activity's technical library.

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Chem-Bio News – S&T Edition

1. MAGNETIC RESONANCE IMAGING REVEALS THAT GALANTAMINE PREVENTS STRUCTURAL BRAIN DAMAGE INDUCED BY AN ACUTE EXPOSURE OF GUINEA PIGS TO SOMAN: *"It is, therefore, concluded that galantamine can effectively prevent the structural brain damage induced by an acute exposure to soman.*"

2. ALL-IN-ONE MERCURY REMOVAL: *"Shengyang Tao, from the Dalian University of Technology, and colleagues have created a nanocomposite microsphere that can detect, adsorb and remove mercury from water. The ability to combine all these functionalities in a single material is unique, says Tao."*

3. AN ALTERNATIVE IN VITRO METHOD FOR DETECTING NEUROPATHIC COMPOUNDS BASED ON ACETYLCHOLINESTERASE INHIBITION AND ON INHIBITION AND AGING OF NEUROPATHY TARGET ESTERASE (NTE): *"The in vivo-in vitro discrepancies with two of the tested compounds can be explained on the basis of differences between in vivo and in vitro biotransformation.*"

4. AMPEROMETRIC IMMUNOSENSOR FOR RICIN BY USING ON GRAPHITE AND CARBON NANOTUBE PASTE ELECTRODES: *"The high sensitivity of MWCNTPE was attributed to its better electrochemical properties rather than to its efficiency to adsorb antibodies.*"

5. EVALUATION OF BACILLUS ANTHRACIS AND YERSINIA PESTIS SAMPLE COLLECTION FROM NONPOROUS SURFACES BY QUANTITATIVE REAL-TIME PCR: "*These findings contribute to the validation of standard bioforensics procedures and emphasize the importance of specific strain and surface interactions in pathogen detection.*"

6. DEVELOPMENT OF CELL-BASED ASSAYS TO MEASURE BOTULINUM NEUROTOXIN SEROTYPE A ACTIVITY USING CLEAVAGE-SENSITIVE ANTIBODIES: *"Importantly, these assays provided novel methods for evaluating BoNT/A activity in cellular models of intoxication and allowed for the high-throughput evaluation of experimental compounds.*"

7. HEAVILY ISOTYPE-DEPENDENT PROTECTIVE ACTIVITIES OF HUMAN ANTIBODIES AGAINST VACCINIA VIRUS EXTRACELLULAR VIRION ANTIGEN B5: *"By switching Fc domains of a single MAb, we have definitively shown that neutralization in vitro--and protection in vivo in a mouse model--by the human anti-B5 immunoglobulin G MAbs is isotype dependent, thereby demonstrating that efficient protection by these antibodies is not simply dependent on binding an appropriate vaccinia virion antigen with high affinity but in fact requires antibody effector function."*

8. COMPLEMENT-BOUND HUMAN ANTIBODIES TO VACCINIA VIRUS B5 ANTIGEN PROTECT MICE FROM VIRUS CHALLENGE: *"The paper under evaluation demonstrates that most of the neutralization in vitro and protection in vivo in a mouse model, by monoclonal human anti-B5 IgGs, is heavily dependent on the ability of the IgGs to bind complement (C3 and C1q)."*

9. DIFFERENTIAL BINDING OF BISPYRIDINIUM OXIME DRUGS WITH ACETYLCHOLINESTERASE: *"We found that the active pyridinium ring of HI-6 undergoes a complete turn along the active site axis, directed away from the active-site region during the course of the simulation. Due to excellent cooperative binding of Ortho-7, as rendered by several cation-pi interactions with the active-site gorge of the enzyme, Ortho-7 may be a more efficient reactivator than HI-6."*

10. ONE TIME INTRANASAL VACCINATION WITH A MODIFIED VACCINIA TIANTAN STRAIN MVTT(ZCI) PROTECTS ANIMALS AGAINST PATHOGENIC VIRAL CHALLENGE: *"This study established proof-of-concept that the attenuated replicating MVTT(ZCI) may serve as a safe noninvasive smallpox vaccine candidate.*"

11. ENHANCED STABILITY OF ENZYME ORGANOPHOSPHATE HYDROLASE INTERFACED ON THE CARBON NANOTUBES: *"These results suggest that covalent immobilization of OPH on CNTs can be used for specific immobilization with advantages of long term stability, high sensitivity, and simplicity."*

12. NOROVIRUS TRANSMISSION ON AN AIRPLANE: *"The researchers concluded that despite the short duration, transmission of norovirus likely occurred during the flight. The study was published in the May issue of the journal Clinical Infectious Diseases."*

13. RESEARCHERS FIND COMPOUND EFFECTIVE IN DESTROYING ANTIBIOTIC-RESISTANT BIOFILMS: *"Researchers at North Carolina State University have found a chemical compound that, when used in conjunction with conventional antibiotics, is effective in destroying biofilms produced by antibiotic-resistant strains of bacteria such as the Staphylococcus strain MRSA and Acinetobacter. The compound also re-sentsitizes those bacteria to antibiotics."*

CB Daily Report

Chem-Bio News

MAGNETIC RESONANCE IMAGING REVEALS THAT GALANTAMINE PREVENTS STRUCTURAL BRAIN DAMAGE INDUCED BY AN ACUTE EXPOSURE OF GUINEA PIGS TO SOMAN
Life Science Weekly
April 6, 2010

"Galantamine, a drug used to treat Alzheimer's disease, has recently emerged as a potential medical countermeasure against the toxicity of organophosphorus (OP) compounds, including the nerve agent soman. Here, magnetic resonance imaging (MRI) was used to characterize the neurotoxic effects of soman and the ability of galantamine to prevent these effects in guinea pigs, the best non-primate model to predict the effectiveness of antidotes against OP toxicity in humans."

"The brains of treated and untreated guinea pigs were imaged using a clinical 3.0 Tesla MRI scanner at 48 h before and 6-7 h, 48 h and 7 days after their challenge with 1.0xLD50 soman (26.6 mu g/kg, sc). Significant brain atrophy was observed among all untreated animals at 7 days after their challenge with soman. In mildly intoxicated animals, significant shortening of spin-spin relaxation times (T2) was observed in the thalamus and amygdala at 7 h after the challenge. In severely intoxicated animals, T2 values and T2-weighted signal intensities increased significantly in the piriform cortex, hippocampus, thalamus and amygdala: in most regions, changes were long-lasting. Voxel-based morphometric analysis of the images revealed that other brain regions were also damaged in these animals. Neuronal loss was confirmed histopathologically. In animals that were treated with galantamine (8 mg/kg, im) 30 min prior to the exposure to soman, T2, T2-weighted signal intensities, and CSF volumes were largely unaffected."

"It is, therefore, concluded that galantamine can effectively prevent the structural brain damage induced by an acute exposure to soman."

The full article can be found at: (R.P. Gullapalli, et. al., "Magnetic resonance imaging reveals that galantamine prevents structural brain damage induced by an acute exposure of guinea pigs to soman". Neurotoxicology, 2010;31(1):67-76). Link not available.
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ALL-IN-ONE MERCURY REMOVAL
By Rebecca Brodie
Highlights in Chemical Technology
25 March 2010

"The mercury(II) ion is the most stable form of inorganic mercury and is known to have detrimental

effects on humans and the environment. It is released into the environment by activities including fossil fuel combustion, waste batteries and chemical manufacturing. Most of the current methods for the detection and removal of mercury require large and expensive instruments which are not suitable for environmental analysis and, in most cases, the two processes have to be performed separately.

Shengyang Tao, from the Dalian University of Technology, and colleagues have created a nanocomposite microsphere that can detect, adsorb and remove mercury from water. The ability to combine all these functionalities in a single material is unique, says Tao.

Tao manufactured the microspheres using a simple procedure and inexpensive materials. A magnetic Fe_3O_4 core was encased in a non-porous inner silica shell and then a mesoporous silica outer shell, combined with a Rhodamine B-derivative (a fluorescent dye) was added. The Rhodamine B acts as a probe to find the mercury, which is then adsorbed by the silica shell. Applying a magnetic field attracts the microspheres, pulling them and the mercury out of the water."

The full article can be found at:
http://www.rsc.org/Publishing/ChemTech/Volume/2010/04/All_in_one.asp

The original article can be found at: http://www.rsc.org/Publishing/Journals/JM/article.asp?doi=c000315h
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AN ALTERNATIVE IN VITRO METHOD FOR DETECTING NEUROPATHIC COMPOUNDS BASED ON ACETYLCHOLINESTERASE INHIBITION AND ON INHIBITION AND AGING OF NEUROPATHY TARGET ESTERASE (NTE)
Life Science Weekly
April 6, 2010

"Organophosphorus-induced delayed polyneuropathy (OPIDP) is a syndrome induced by certain organophosphorus compounds (OPs) through a mechanism based on the inhibition and further modification (aging) of neuropathy target esterase (NTE). OECD guidelines for testing the capability of OPs to trigger OPIDP include two in vivo tests with hens."

"Activities of acetylcholinesterase and NTE found in SH-SY5Y human neuroblastoma cells were inhibited by 10 different OPs with kinetics similar to those found with chicken brain enzymes (model system for in vivo and in vitro-ex vivo assays). NTE in SH-SY5Y cells inhibited by these OPs aged and reactivated similarly to that described for hen brain NTE ex vivo. In short, we have developed an alternative methodology for predicting the capability of OPs to induce OPIDP based on the inhibition kinetics of acetylcholinesterase and NTE and on the capability of OPs to age the inhibited NTE from SH-SY5Y cell line. The results obtained always agreed with the previously reported ex vivo results with hen brain. The developed methodology correctly predicted the neuropathic potential of the tested OPs in eight cases."

"The in vivo-in vitro discrepancies with two of the tested compounds can be explained on the basis of differences between in vivo and in vitro biotransformation."

The full article can be found at: (M.A. Sogorb, et. al., "An alternative in vitro method for detecting neuropathic compounds based on acetylcholinesterase inhibition and on inhibition and aging of neuropathy target esterase (NTE)". Toxicology In Vitro, 2010;24(3):942-52). Link not available.
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AMPEROMETRIC IMMUNOSENSOR FOR RICIN BY USING ON GRAPHITE AND CARBON NANOTUBE PASTE ELECTRODES
Biotech Law Weekly
April 2, 2010

"These electrodes were made by mixing Paraffin oil with graphite powder and multiwalled carbon nanotubes. The graphite paste electrode (CPE) and multiwalled carbon nanotubes paste electrode

(MWCNTPE) were tested for their ability to detect 1-naphthol. A sandwich enzyme linked immunosorbent assay system was used to detect ricin. The detection limit for both electrodes was compared. It was found that the response of amperometric sensor is proportional to the ricin concentration in both the cases and is linear in the range 0.625-25 ng/ml for MWCNTPE and 2.5-25 ng/ml for CPE. The SEM showed that the MWCNTPE has revealed crevices/voids in which the antibodies may get trapped. Spectroscopic experiments proved that MWCNTPE adsorbs antibodies better than CPE."

"The high sensitivity of MWCNTPE was attributed to its better electrochemical properties rather than to its efficiency to adsorb antibodies."

The full article can be found at: (S. Suresh, et. al., "Amperometric immunosensor for ricin by using on graphite and carbon nanotube paste electrodes". Talanta, 2010;81(1-2):703-8). Link not available.
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EVALUATION OF BACILLUS ANTHRACIS AND YERSINIA PESTIS SAMPLE COLLECTION FROM NONPOROUS SURFACES BY QUANTITATIVE REAL-TIME PCR
FDA Law Weekly
April 15, 2010

"We will validate sample collection methods for recovery of microbial evidence in the event of accidental or intentional release of biological agents into the environment. We evaluated the sample recovery efficiencies of two collection methods - swabs and wipes - for both nonvirulent and virulent strains of Bacillus anthracis and Yersinia pestis from four types of nonporous surfaces: two hydrophilic surfaces, stainless steel and glass, and two hydrophobic surfaces, vinyl and plastic."

"Sample recovery was quantified using real-time qPCR to assay for intact DNA signatures. We found no consistent difference in collection efficiency between swabs or wipes. Furthermore, collection efficiency was more surface-dependent for virulent strains than nonvirulent strains. For the two nonvirulent strains, collection efficiency was similar between all four surfaces, albeit B. anthracis Sterne exhibited higher levels of recovery compared to Y. pestis A1122. In contrast, recovery of B. anthracis Ames spores and Y. pestis CO92 from the hydrophilic glass or stainless steel surfaces was generally more efficient compared to collection from the hydrophobic vinyl and plastic surfaces. Our results suggest that surface hydrophobicity may play a role in the strength of pathogen adhesion. The surface-dependent collection efficiencies observed with the virulent strains may arise from strain-specific expression of capsular material or other cell surface receptors that alter cell adhesion to specific surfaces."

"These findings contribute to the validation of standard bioforensics procedures and emphasize the importance of specific strain and surface interactions in pathogen detection."

The full article can be found at: (E. Honggeller, et. al., "Evaluation of Bacillus anthracis and Yersinia pestis sample collection from nonporous surfaces by quantitative real-time PCR". Letters in Applied Microbiology, 2010;50(4):431-437). Link not available.
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DEVELOPMENT OF CELL-BASED ASSAYS TO MEASURE BOTULINUM NEUROTOXIN SEROTYPE A ACTIVITY USING CLEAVAGE-SENSITIVE ANTIBODIES
Life Science Weekly
April 13, 2010

"Botulinum neurotoxins (BoNTs) are zinc-metalloproteases that cleave components of the SNARE (soluble N-ethylmaleimide-sensitive factor attachment protein receptor) protein complex, inhibiting acetylcholine release into neuromuscular junctions, resulting in flaccid paralysis and eventual death. The potential for the malicious misuse of these toxins as bioweapons has created an urgent need to develop effective therapeutic countermeasures."

"Robust cell-based assays will be essential for lead identification and the optimization of therapeutic

candidates. In this study, the authors developed novel BoNT serotype A (BoNT/A) cleavage-sensitive (BACS) antibodies that only interact with full-length SNAP-25 (synaptosomal-associated protein of 25 kDa), the molecular target of the BoNT/A serotype. These antibodies exhibit high specificity for full-length SNAP-25, allowing the BoNT/A-mediated proteolysis of this protein to be measured in diverse assay formats, including several variations of enzyme-linked immunosorbent assay and multiple immunofluorescence methods. Assays built around the BACS antibodies displayed excellent sensitivity, had excellent reproducibility, and were amenable to multiwell formats."

"Importantly, these assays provided novel methods for evaluating BoNT/A activity in cellular models of intoxication and allowed for the high-throughput evaluation of experimental compounds."

The full article can be found at: (J.E. Nuss, et. al., "Development of cell-based assays to measure botulinum neurotoxin serotype A activity using cleavage-sensitive antibodies". Journal of Biomolecular Screening, 2010;15(1):42-51). Link not available.
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HEAVILY ISOTYPE-DEPENDENT PROTECTIVE ACTIVITIES OF HUMAN ANTIBODIES AGAINST VACCINIA VIRUS EXTRACELLULAR VIRION ANTIGEN B5
Immunotherapy Weekly
April 14, 2010

"Antibodies against the extracellular virion (EV or EEV) form of vaccinia virus are an important component of protective immunity in animal models and likely contribute to the protection of immunized humans against poxviruses. Using fully human monoclonal antibodies (MAbs), we now have shown that the protective attributes of the human anti-B5 antibody response to the smallpox vaccine (vaccinia virus) are heavily dependent on effector functions."

"By switching Fc domains of a single MAb, we have definitively shown that neutralization in vitro--and protection in vivo in a mouse model--by the human anti-B5 immunoglobulin G MAbs is isotype dependent, thereby demonstrating that efficient protection by these antibodies is not simply dependent on binding an appropriate vaccinia virion antigen with high affinity but in fact requires antibody effector function. The complement components C3 and C1q, but not C5, were required for neutralization. We also have demonstrated that human MAbs against B5 can potently direct complement-dependent cytotoxicity of vaccinia virus-infected cells. Each of these results was then extended to the polyclonal human antibody response to the smallpox vaccine. A model is proposed to explain the mechanism of EV neutralization."

The full article can be found at: (M.R. Benhnia, et. al., "Heavily isotype-dependent protective activities of human antibodies against vaccinia virus extracellular virion antigen B5". Journal of Virology, 2009;83(23):12355-67). Link not available.
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COMPLEMENT-BOUND HUMAN ANTIBODIES TO VACCINIA VIRUS B5 ANTIGEN PROTECT MICE FROM VIRUS CHALLENGE
Immunotherapy Weekly
April 14, 2010

"B5, a viral EV protein, is conserved among different orthopoxviruses and antibodies to B5 that protect mice against VACV challenge. Antibodies to B5 are primarily responsible for neutralization of vaccinia EVs, yet the mechanism of EV neutralization by antibodies to B5 is not fully understood. The paper under evaluation demonstrates that most of the neutralization in vitro and protection in vivo in a mouse model, by monoclonal human anti-B5 IgGs, is heavily dependent on the ability of the IgGs to bind complement (C3 and C1q). Similarly, IgGs capable of complement binding control complement-dependent cytotoxicity of VACV-infected cells. Human polyclonal antibodies induced by the smallpox vaccine were similarly dependent on complement for EV neutralization and the complement-dependent destruction of infected cells."

The full article can be found at: (N. Paran, et. al., “Complement-bound human antibodies to vaccinia virus B5 antigen protect mice from virus challenge”. Expert Review of Vaccines, 2010;9(3):255-9). Link not available.
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DIFFERENTIAL BINDING OF BISPYRIDINIUM OXIME DRUGS WITH ACETYLCHOLINESTERASE
Proteomics Weekly
April 5, 2010

"To performe a time-dependent topographical delineation of protein-drug interactions to gain molecular insight into the supremacy of Ortho-7 over HI-6 in reactivating tabun-conjugated mouse acetylcholinesterase (mAChE). We conducted all-atom steered molecular dynamics simulations of the two protein-drug complexes."

"Through a host of protein-drug interaction parameters (rupture force profiles, hydrogen bonds, water bridges, hydrophobic interactions), geometrical, and orientation ordering of the drugs, we monitored the enzyme's response during the release of the drugs from its active-site. The results show the preferential binding of the drugs with the enzyme. The pyridinium ring of HI-6 shows excellent complementary binding with the peripheral anionic site, whereas one of two identical pyridinium rings of Ortho-7 has excellent binding compatibility in the enzyme active-site where it can orchestrate the reactivation process. We found that the active pyridinium ring of HI-6 undergoes a complete turn along the active site axis, directed away from the active-site region during the course of the simulation. Due to excellent cooperative binding of Ortho-7, as rendered by several cation-pi interactions with the active-site gorge of the enzyme, Ortho-7 may be a more efficient reactivator than HI-6.”

The full article can be found at: (M.K. Kesharwani, et. al., “Differential binding of bispyridinium oxime drugs with acetylcholinesterase”. Acta Pharmacologica Sinica, 2010;31(3):313-28). Link not available.
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ONE TIME INTRANASAL VACCINATION WITH A MODIFIED VACCINIA TIANTAN STRAIN MVTT(ZCI) PROTECTS ANIMALS AGAINST PATHOGENIC VIRAL CHALLENGE
Medical Letter on the CDC & FDA
April 4, 2010

"To combat variola virus in bioterrorist attacks, it is desirable to develop a noninvasive vaccine. Based on the vaccinia Tiantan (VTT) strain, which was historically used to eradicate the smallpox in China, we generated a modified VTT (MVTT(ZCI)) by removing the hemagglutinin gene and an 11,944bp genomic region from HindIII fragment C2L to F3L.”

"MVTT(ZCI) was characterized for its host cell range in vitro and preclinical safety and efficacy profiles in mice. Despite replication-competency in some cell lines, unlike VTT, MVTT(ZCI) did not cause death after intracranial injection or body weight loss after intranasal inoculation. MVTT(ZCI) did not replicate in mouse brain and was safe in immunodeficient mice. MVTT(ZCI) induced neutralizing antibodies via the intranasal route of immunization. One time intranasal immunization protected animals from the challenge of the pathogenic vaccinia WR strain.”

"This study established proof-of-concept that the attenuated replicating MVTT(ZCI) may serve as a safe noninvasive smallpox vaccine candidate."

The full article can be found at: (W. Yu, et. al., “One time intranasal vaccination with a modified vaccinia Tiantan strain MVTT(ZCI) protects animals against pathogenic viral challenge”. Vaccine, 2010;28(9):2088-96). Link not available.
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ENHANCED STABILITY OF ENZYME ORGANOPHOSPHATE HYDROLASE INTERFACED ON THE CARBON NANOTUBES
Proteomics Weekly
April 5, 2010

"In this paper we demonstrate that SWNTs [single wall nanotubes] and a covalent immobilization strategy enable very sensitive sensors with excellent long term stability. Organophosphorus hydrolase (OPH) functionalized single and multi-walled carbon nanotube (CNT) conjugates were exploited for direct amperometric detection of paraoxon, a model organophosphate."

"The catalytic hydrolysis of paraoxon produces equimoles of p-nitrophenol; oxidation was monitored amperometrically in real time under flow-injection (FIA) mode. OPH covalently immobilized on single-walled carbon nanotubes (SWNTs) demonstrated much higher activity than OPH conjugated to multi-walled carbon nanotubes (MWNTs). The dynamic concentration range for SWNT-OPH was 0.5-8.5 micromolL(-1) with a detection limit of 0.01 micromolL(-1) (S/N=3). In addition to this high sensitivity, the immobilized OPH retained a significant degree of enzymatic activity, and displayed remarkable stability with only 25% signal loss over 7 months."

"These results suggest that covalent immobilization of OPH on CNTs can be used for specific immobilization with advantages of long term stability, high sensitivity, and simplicity."

The full article can be found at: (V.A. Pedrosa, et. al., "Enhanced stability of enzyme organophosphate hydrolase interfaced on the carbon nanotubes". Colloids and Surfaces B, Biointerfaces, 2010;77(1):69-74). Link not available.
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NOROVIRUS TRANSMISSION ON AN AIRPLANE
Infection Control Today Magazine
April 08, 2010

"Transmission of norovirus on cruise ships is quite common, but Kirking HL, et al. (2010) report on possible transmission on an airplane. The researchers looked at the experiences of the members of a tour group who had diarrhea and vomiting throughout a flight from Boston to Los Angeles in 2008, resulting in an emergency diversion three hours after takeoff. An investigation was conducted to determine the cause of the outbreak, assess whether transmission occurred on the airplane, and describe risk factors for transmission.

Passengers and crew were contacted to obtain information about demographics, symptoms, locations on the airplane, and possible risk factors for transmission. Case patients were defined as passengers with vomiting or diarrhea (three loose stools in 24 hours) and were asked to submit stool samples for norovirus testing by realtime reversetranscription polymerase chain reaction.

The researchers discovered that 36 (88 percent) of 41 tour group members were interviewed, and 15 (41 percent) met the case definition (peak date of illness onset, 8 October 2008). Of 106 passengers who were not tour group members, 85 (80 percent) were interviewed, and 7 (8 percent) met the case definition after the flight (peak date of illness onset, 10 October 2008). Multivariate logistic regression analysis showed that sitting in an aisle seat (adjusted relative risk, 11.0; 95 percent confidence interval, 1.4–84.9) and sitting near any tour group member (adjusted relative risk, 7.5; 95 percent confidence interval, 1.7–33.6) were associated with the development of illness. Norovirus genotype II was detected by reversetranscription polymerase chain reaction in stool samples from case patients in both groups.

The researchers concluded that despite the short duration, transmission of norovirus likely occurred during the flight. The study was published in the May issue of the journal Clinical Infectious Diseases.

Reference: Kirking HL, et al. Likely transmission of norovirus on an airplane, October 2008. Clin Infect Dis. 2010;50:1216-1221."

The full article can be found at: http://www.infectioncontroltoday.com/hotnews/norovirus-transmission-

on-an-airplane.html
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RESEARCHERS FIND COMPOUND EFFECTIVE IN DESTROYING ANTIBIOTIC-RESISTANT BIOFILMS
Infection Control Today Magazine
April 08, 2010

"Researchers at North Carolina State University have found a chemical compound that, when used in conjunction with conventional antibiotics, is effective in destroying biofilms produced by antibiotic-resistant strains of bacteria such as the Staphylococcus strain MRSA and Acinetobacter. The compound also re-sentsitizes those bacteria to antibiotics."

…..

"NC State chemist Dr. Christian Melander had already shown that combining a compound made from a class of molecules known as 2-aminoimidazoles with antibiotics was effective in dispersing the biofilms created by certain bacterial strains. The next step was to see if this combination could remove resistant bacteria from surfaces."

…..

"Melander and his team, in collaboration with NC State biochemist John Cavanagh, found that pre-treating the bacteria with their compound and then introducing the antibiotic penicillin one hour later increased the penicillin's effectiveness 128-fold, even when the bacteria was penicillin resistant. The antibiotics also provided a 1,000-fold enhancement to the ability of the 2-aminoimidazole to disperse biofilms.

The researchers' results were published online March 8 in the journal Antimicrobial Agents and Chemotherapy."

The full article can be found at: http://www.infectioncontroltoday.com/hotnews/destroying-antibiotic-resistant-biofilms.html
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