

Bio Nanotube Its Application in Vaccination and Cancer Therapy

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ABSTRACT

Microfluidic activities predominate all processing of metal, polymers, Artificial Internal Organ (AIO), Regenerative medicine and Biological systems. Microfluidic system is also used in RT-PCR (Real Time Polymerase Chain Reaction) automatic to use reverse transcriptase, to design C-(Cloned)-DNA to initiate, DNA-DNA or DNA-RNA hybridization to detect/separate corona infected person from non-infected one. BNT (bionano tube) of Escherichia coli was made by isolated fimbriae (pili) of hybrid, genetically engineered) E. coli K-12 C600, Yale USA strain. BNT is made by isolated fimbriae (pili), growing in outermost surface antigen of E. coli and are differentiated by O: K:H: If BNT are immobilized by cancer drugs they could pursue bidirectional AAIR to prevent benign tumor to malignant. This is possible, because GE E. coli is made by the cloning of isolated tumor genes. BNT, if made GE hybrid E. coli, particularly by cancer isolated gene, fimbriae of GE E. coli would response humoral antibodies against that specific cancer cell. Similarly, it would response the AAIR against opportunistic microbial infections. The slow movements of DNA were essential during reverse transcriptase, involved in polymerase chain reaction. Micro fluidic transport supports RT-PCR. Reverse transcriptase enzyme reactions, molecules, convert DNA to RNA, to detect corona/viral m-RNA. The m-RNA moves from spike proteins, to lung alveoli cells by fusion of spike proteins, help to transcribe, translate and multiply corona viral particles and to spread corona. Virulence and pathogens are determined by the adhering nature of microbes and also cancer cells. They are all being characterized by innate immunity, varied from individual to individual and community to community. ETEC (Enterotoxigenic-(O8 :)) EPEC (Enter pathogenic-, (O26:)) and UTI (Urinary Tract Infective) (O25: O:11) Escherichia coli carry plasmids, during their infective/virulent phase. These plasmids were identified in AGE (Agarose Gel Electrophoresis). MRHU (D-mannose Resistant haemagglutination of Human Erythrocytes) plasmids determines the adhering nature of microbes. The HA tests in vitro, virulence test (+/-) vivo in Balb/C mice and plasmid test in AGE established the relations of AAIR All Balb/ C mice vivo phenotypic expressions were made intraperitoneal inoculum. The virulence/adherence / pathogenic E. coli as ETEC, EPEC/UTI were used to design AAIR.

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Objective

- THE REASON TO CONSIDER BNT IN CANCER THERAPY AND IN AAIR AGANST INFECTIONS.
- Fig.3 and 4.
- HOW BNT WOULD BE USED IN AAIR NAD IN CANCER TRHAPY AND VACCINATION
- STEPS INVOLVED IN PREPARAYION OF BNT
- TO CONSIDER BNT AS A NEW CONCEPT OF THE AUTHOR
- CORRELATION OF BACTERIAL/MICROBIAL COLONIZATION / ADHERENCE WITH INFECTION OFF MICROBES AND INFECTION.

Materials and Methods

Attempts were made to generate one Hybrid E. Coli K-12, expressed MRHU+/Pathogen-/Virulence-. Hundreds of AGE, and modified Genetic engineering of microbiological experiments were completed to isolate one, fimbriae+, hybrid E. coli, carried MRHU (+), plasmid in AGE, expressing non-pathogenic, non-virulence vivo in Balb/C mice. The isolated Hybrid fimbriae were used to design BNT, expressing AAIR (Anti adherent immune response) in Balk/C mice (i.e. immunized, inoculated mice showed no infective nature, moreover generated AAIR against O26: EPEC

fatal diarrhea. Mice were healthy. The said AAIR activities in Balb/ c mice helped the author to design BNT and RT-PCR. Microfluidic activities are used both in RT-PCR and in BNT. Isolated fimbriae when clustered and mixed with polymer araldite generate Nano channels, as shown in Fig A and B. Water flow at pressure drop significantly proved the existence Nano level of hollow tubes and allowed to pass water at Delta P environment, compared to pure araldite membrane. Fig.3. Compared to pure araldite Fig.2B, dotted spots were identified in membrane mixed with fimbriae (BNT) At 400X the spots the dotted marks were identified Microscopically.

The hybrid GE-Fimbriae BNT signifies the understanding of bidirectional activities in monitoring corona, bacterial infections and malignancies. Prophylaxis of corona, SERS, MERS, Delta-corona and Omicron variants, as caused due to m-RNA mutations have confused globally, the scientists and doctors to understand virulence and infective natures of virus, where adherence could have been significant the role of spike proteins, adhere and using ACE (Angiotensin in Converting Enzyme, I, II) to generate multiple corona particles and to spread infection. Hybrid fimbriae (pili) proved AAIR in Balb/c and possible development of GE-BNT to establish the importance of microfluidic in bidirectional AAIR to prevent chemotherapy of Cancer, diarrheal and urinal

infections of ETEC, EPEC and UTI Escherichia coli. The work has been divided in two parts 1st part described the development of BNT and 2ND part describes the importance of microfluidics in BNT. The development and the concept of BNT has been generated by isolation of fimbriae (pili) as shown in Fig.1. The size of one bacteria is 1 micron (m). Diameter of one fimbriae (pili) is 0.001micron (m) and the length is about 2 -5 micron (m). Fig.1.It was found in SEM (Scanning Electron Microscopy), isolated fimbriae remains in clustered form, as shown in Fig.1, right part. Two different types of fimbria clusters are observed in Fig.1 (a, b, c). BNT has been conceptual/ developed by the aggregation of single fimbriae Fig.1 (b).

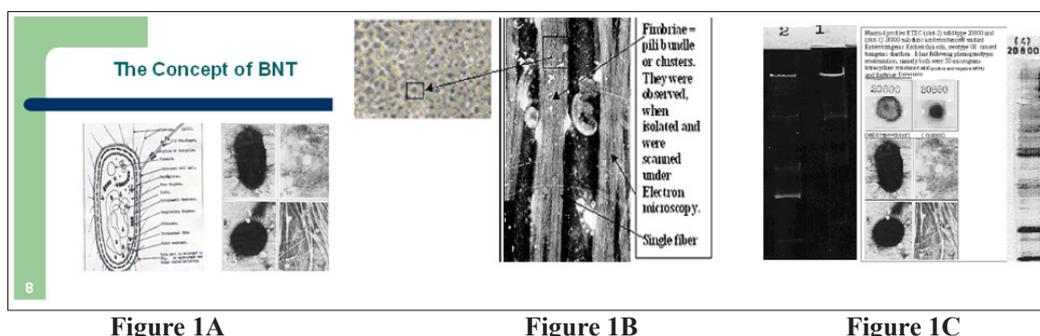


Figure 1A

Figure 1B

Figure 1C

BNT is made by clusters of fimbriae. A clustered is made by aggregation of 10-100 fimbriae/ pili (fimbriae). The diameter of a single diameter of one fimbriae is about 0.005-.0006 micron (m) as shown in Fig 1(a,b).

Fig .2 A and B show the possible development of nano-channel in araldite film where anti- cancerous drugs are supposed to be immobilized. Immobilization is the technique in which drug molecules are tagged. The arrested drug molecules are specific. As targeted molecules (i.e. Enzyme reacts with Substrate), the Cancer cells were regressed. Figures A and B represent the development of Nano channel of fimbriae (pili) BNT, isolated from GE Hybrid E. Coli K-12. Nano channels are reproduced as Dots, Fig.A. and Fig.B represent the pure araldite film, without dots. Fig.B were enlarged at 400X The size of Nano is 10^{-9} m (meter) with relative increasing surface area. Nano provides the possible biocompatible host –vs-.graft humoral anti-adherent humoral response. Minimizing the side effects BNT including the cytotoxic effects of CNT (Carbon Nanotube), BNT as the new concept of the author perform green and sustainable drug delivery against cancer and corona. Fig.2 A, B Fig. 2 A and B bottom figures represent the possible view of immobilized fimbriae.Fig.2A represents by dotted spots on araldite film, supports the flow of water. Fig 2B shows the membrane film of pure araldite without the mixtures and presence. The flow of water was performed by syringe attached with membrane cassette, where both A and B were tagged and the water flow. The pressure drop was developed by injecting pressure made by thumb finger. The possible water flow through BNT was identified. AAIR was performed in Balb/C mice.



Figure A

Figure B

Figure C

Results and Discussion

The reduction of size, with increasing catalytic/ enzymatic reactions are the major interest of research and development.

- Nano Business supports the concept of green and sustainable social and industrial development. Due to minimization of spaces the recyclable nature of nano improves the concepts of green and sustainable development.
- Space and Time is the Global Challenge. The developed nations have conquered the philosophy corresponding to Energy, mitigate the demands of (Water, Health and Food) Developed Nations overrule/control 6.0 billion population of developing Nations, increased thereby maximum life amenities to enjoy the rest 3.5 billion people of the world. 2030.
- Nano sizes Molecular Design are highly demandable in PC industries. Presently in Naphtha cracking zeolite nanoparticles are used in petrochemical industries.
- Gold nanoparticles and glucose oxidase are used as (bio

electro- catalysis) Biosensor are used in fermentation, in vaccine development and for conversions of bio-products.

- Nanotechnology BNT applications in Vaccination, in Cancer and in corona treatments could have taken important Role. It needs many more experiments.
- Nanotechnology and Microfluidics have taken new and important Role in Engineering and Scientific activities.
- If the adherence of Corona Spike Protein could have been protected by vaccination using BNT based AAIR ,it would be a new biological evolution. AAIR vaccination supposed to be a new genesis in Pandemics.
- Vitro analytical processes could have been easily be modified faster, and efficiently, but vivo application are time bound and need dedication, love, understanding, devotions and support.
- Fig.3 and 4 figure represent the possible development of BNT and the use of syringe with membrane cassette. Fig.4 shows the use of BNT as biomaterial used in human body.

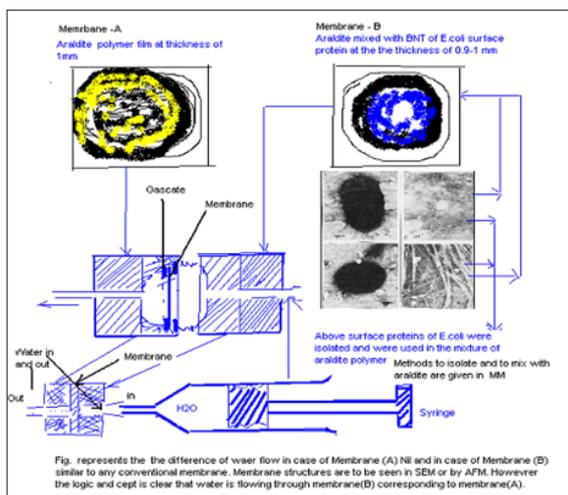


Figure 3A, 3B

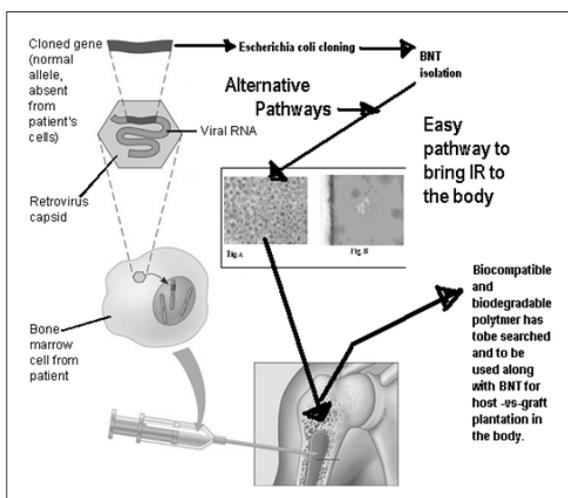


Figure 4

AAIR (Antiadherent Immune Response), specific against fungi, bacterial and viral infections is still demanding due to increasing corona infection. Corona Covid-19 infection is not end. We are continuously moving towards infectious world. Infectious world is made due to increasing population and pollution and is overruled by biological pollution. It includes the involvement of fungi, bacteria and virus, essentially generate and are involved in survivals of mankind, and initiate the development of pathogens and nonpathogens by genetic mutations, where prokaryotes took the leading part in spreading infections by epidemic to pandemic. Corona is one example. The functions of molecular biology and the involvement of “Jumping gene”, “transposable elements, (Tn) flanked by insertion sequences (IS) DNA elements (IS::Tn::IS).

Every living system, lower and higher groups, of animal and plants follow the rule of “Charles Darwin”, where the environment acted as main factor similar to “Lamarck”. Based on environment, the survivals of the fittest was predominated, where the genetic activities of a single species dominate the modification by their pheno- and geno-types. The structural modification during corona pandemics did not change much compared to the infective mode (i.e. genetic modification, genotypes). It was observed among SERS, MARS, Covid-19 and Omicron.

Some mutants spreading their infection rapidly compared to the infected pandemic. It was observed that few mutants, suddenly appeared in a country spread globally quickly. Omicron at the end

of pandemic. Corona covid-19 appeared first in developing countries and moved slowly to developed countries and again moved back to developing countries. Scientific logic as observed by the author is that all have similar spike proteins. Phenotypically spikes are appeared on the surface of corona virus. Electron microscopically view shows that all the spikes carry a globular cap on the tips of the spikes. As reproduced in different scientific journals, their infective and fatality rates are found variable different. Considering comorbidity factors of the hosts (i.e. Corona patients who were pneumonia prone, expired in hospital by pneumonia bacterial infection and others few were organ failures patients).

All the prophylaxis of corona co-morbid patients, explore debating environment in medical sciences. In deep observation says AAIR could be the ultimate solution. Based on this scientific facts AAIR, the author claims, that GE hybrid Escherichia coli could be important. A bi-direction immune response is also important (i.e. the vaccine against corona could be managed in same GE-fimbriae. The concept of BNT is an advanced concept), where the loss of vaccine would be minimized and or nil. It has been considered that immobilization concept of specific vaccine (Drug) could be placed in a body to increase the time and bidirectional concepts (i.e. primarily it would protect the adherent nature of corona on lung alveoli cell on the other the comorbid patient would be protected against pneumonia infections [1-10].

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