

Infectious Disease Conf 2019: The antiseptics and antiseptic agents activity: concept of infection prevention in cell culture model- Anna G.Afinogenova , St. Petersburg Pasteur Institute; St. Petersburg State University

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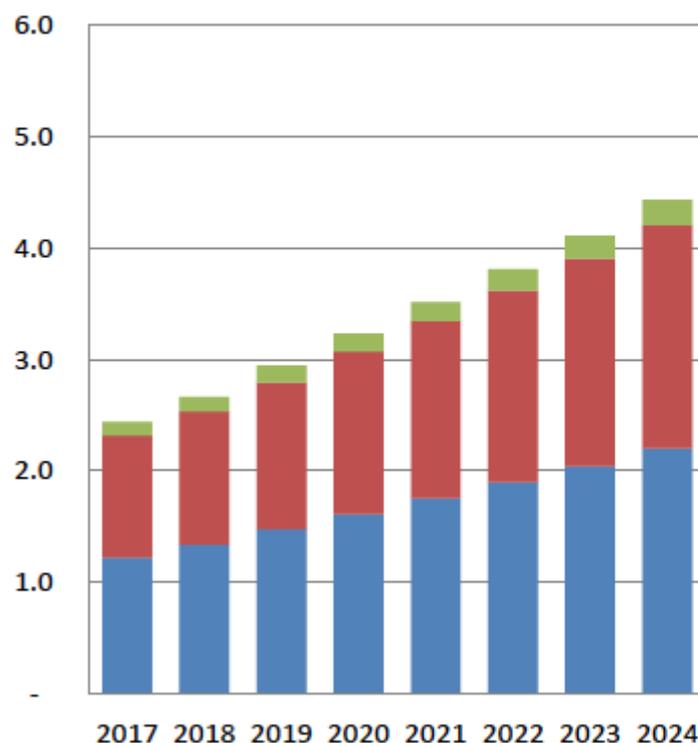
Purpose. The concept of anti-infective action is associated with any xenobiotic effect, which reduces the contamination of the biotic and abiotic surface by microorganisms. We believe that antiseptic agents are sorbents, immunoglobulins, probiotics, bacteriophages. The objective of the study was to show the antiadhesive, antitoxic effect of antiseptics and antiseptic agents, their ability to prevent the formation of microbial biofilms on a model of a fibroblast culture. **Materials&methods.** This model allows to evaluate the influence of subbactericidal concentrations of antiseptics on the microbial factors of adhesion, colonization and their reproduction in tissues, as well as on secreted pathogenicity factors (enzymes, toxins). **Evaluation criteria:** adhesion index, morphological assessment of the state of fibroblasts according to the FDA scale. **Results.** The effect of the polyhexanide subbactericidal dose to prevent the formation of a streptococcal biofilm has been evaluated. Polyhexanide also has an antitoxic effect, which manifests itself in a dose 4,000 times less than the clinical one. This indicates a prolonged antimicrobial action of polyhexanide, which retains its antitoxic effect in subbactericidal concentration, which confirms the absence of antiseptic “depletion” during the observation time (up to 2 hours). The sorption properties of a carbon fiber sorbent impede the formation of a staphylococcal biofilm. Immune drugs have anti-adhesive and anti-toxic effects, suppress protein A of *Staphylococcus*. Probiotic (*Corynebacterium xerosis*) has an anti-adhesive effect. Staphylococcal bacteriophage exerted a rapid lytic effect, preventing contamination of the fibroblast monolayer and the cytotoxic effect of the microbe. **Conclusions.** This model of fibroblasts culture is adequate for studying the adhesive properties of microorganisms and the formation of microbial biofilms in the presence of different xenobiotics. It is essential that this approach can be used in relation to a large number of pathogens that are involved in the formation of microbial biofilms on the surface of wounds and medical devices.

Infectious Diseases Diagnostics Market

The market for infectious disease molecular diagnostics tests incorporates reference research centres, hospitals, blood banks. Size is predicted to grow at 9.42% CAGR from 2018 to 2023 and it is determined that the Middle East and Africa market was valued at USD 1.35 billion in 2018 and is depended upon to accomplish USD 2.12 billion by 2023. Diagnostics of the Infectious disease includes a different technique to check for the presence of a foreign antigen/organism with the assistance of numerous diagnostic tools. Conditions of the

Infectious disease are highly widespread in underdeveloped regions due to the lack of awareness for individual cleanliness, minimal health care expenditures, and absence of effective physician services. Rising instances of infectious diseases in developed economies are additionally expected to help the market development. This has resulted in vitro diagnostic gadget makers to invest in emerging countries. These organizations are making efforts to develop and popularise cost-effective tools for the diagnosis of infectious diseases.

Figure 5.14: BRIC Infectious Disease Diag User (Revenue, \$bn) 2017-2027



Disease diagnostics are utilized for are utilized for in form of a quick, precise test result. Disease diagnostics are on a rise even if it is time-consuming. The infectious disease epidemics are spreading around the world, thereby increasing the demand for diagnostic tests. Additionally, the occurrence of AIDS, malaria, and other diseases are also on increase, creating a vigorous demand for infectious disease diagnostics. Many government-financed programs all over the globe are progressively providing free screening and tests in order to increase awareness, precisely diagnose diseases, and limit the chances of infection. Such activities are foreseen to help the market development in the following couple of years. However, diagnostic kits are highly priced and manufacturers still have a poor assortment channel for working across emerging economies. These two components are anticipated to be the key difficulties to rapid revenue growth of the global infectious diseases diagnostics market.

Recent Outbreak (Zika virus):

Zika virus is the current outbreak occurring from in many countries. It is affected to people primarily through the bite of an infected *Aedes* species mosquito (*Ae. aegypti* and *Ae. albopictus*). Zika can also be passed through sex from a person who has Zika to his or her sex partners and it can also spread from a pregnant woman to her fetus. The National Institutes of Health, USA say trials for Zika vaccine is about to start in September this year. Depending on the results, larger trials could begin at the start of 2017. Up to date, 2015-16 total 69 Zika Virus cases reported with 16 live born infants with birth defects and 5 total pregnancy losses with birth defects.

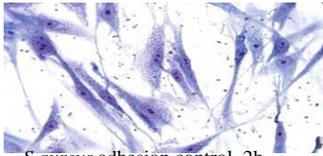
Infectious Diseases Therapeutic Market

The Middle East and Africa Infectious Disease Therapeutics Market accounts for USD 8.42 Billion in 2018 and assessed to achieve 12.29 USD Billion by the end of 2023 with a developing potential of 7.877 %. The Middle East and Africa Infectious disease therapeutics market are categorized based on Mode of treatment into Drugs and Vaccines. The drugs are further segmented into oral administration, topical, injections and others. Based on the target organism the market is categorized

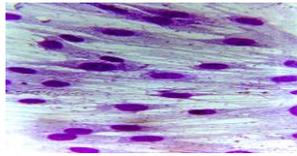
into antibacterial, antifungal, antiviral, antiparasitic and others. Based on infection type the market is categorized into Bacterial, viral, fungal, parasite and others. Based on distribution channels the market is categorized into hospitals, clinics and others. Based on Geography, the Middle East and Africa Infectious disease therapeutics market is analyzed under various regions namely the Middle East and Africa. The global infectious disease therapeutics market size was valued at USD 46.88 billion in 2016 and is projected to grow at a CAGR of 6.6% during the forecast period.

Image

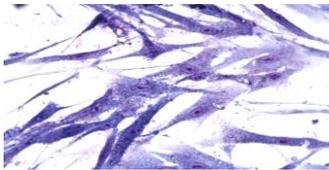
Adhesion of *S. aureus* clinical strain to fibroblasts culture
in the presence of antiseptic agents



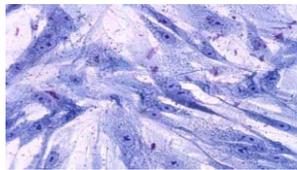
S. aureus adhesion control, 2h



Bacteriophage, 2 h



Immune medicine, 2 h



Carbon fiber sorbent, 2 h