

Engineered Bio-Inorganic Materials Components in the Various Artificial Compounds

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Abstract-

Bioinorganic materials expect the noteworthy activity in each carrying on with living thing. For the most part these blends are responsible for the imperative exercises of a living being, for instance, enzymatic exercises, breath, photosynthesis, metal molecule transport, etc. In continuous time different bioinorganic materials have been organized midway or absolutely in the exploration offices. These built bioinorganic materials fill in as clinical safe house for mankind as they are the key for progression of fake tissues and organs. In this paper we are analyzing about fake organs and related bioinorganic materials.

Keywords: bioinorganic materials, Artificial organs, polymers etc.

I. INTRODUCTION

The characteristic and inorganic materials of a living being make a substitute side of material world. Natural materials, for example, polysaccharides, proteins, nucleic acids and lipids have delicate and versatile nature. They show colossal cutoff points with high ability and mien. In the mix with fabricated or man-made materials these materials can't be recouped or recreated with no issue. The above properties of normal materials acknowledge the prime work in the improvement of altogether present day sensible frameworks. The most ideal approach to manage get essentially reliable and utilitarian bio materials for their supportive applications is to make cross sorts of inorganic and trademark ordinary materials. The normally started materials are powerful and hold different noteworthy nanostructures.

Consequently the most entrancing methodology in the advancement of an engineered bio polymer is the hybridization of inorganic and biological components in a controlled way. The

synthesis of artificial bio materials is an interdisciplinary field which interfaces biotechnology, material science and nanotechnology. Other processes like biomineralization, synthesis and development of bio-inspired materials and biomimetic systems are patrilineal to the synthetic artificial bio materials. The recent developments of novel bio nano-composites with multi-functionalities lead us to the next generation in this field.

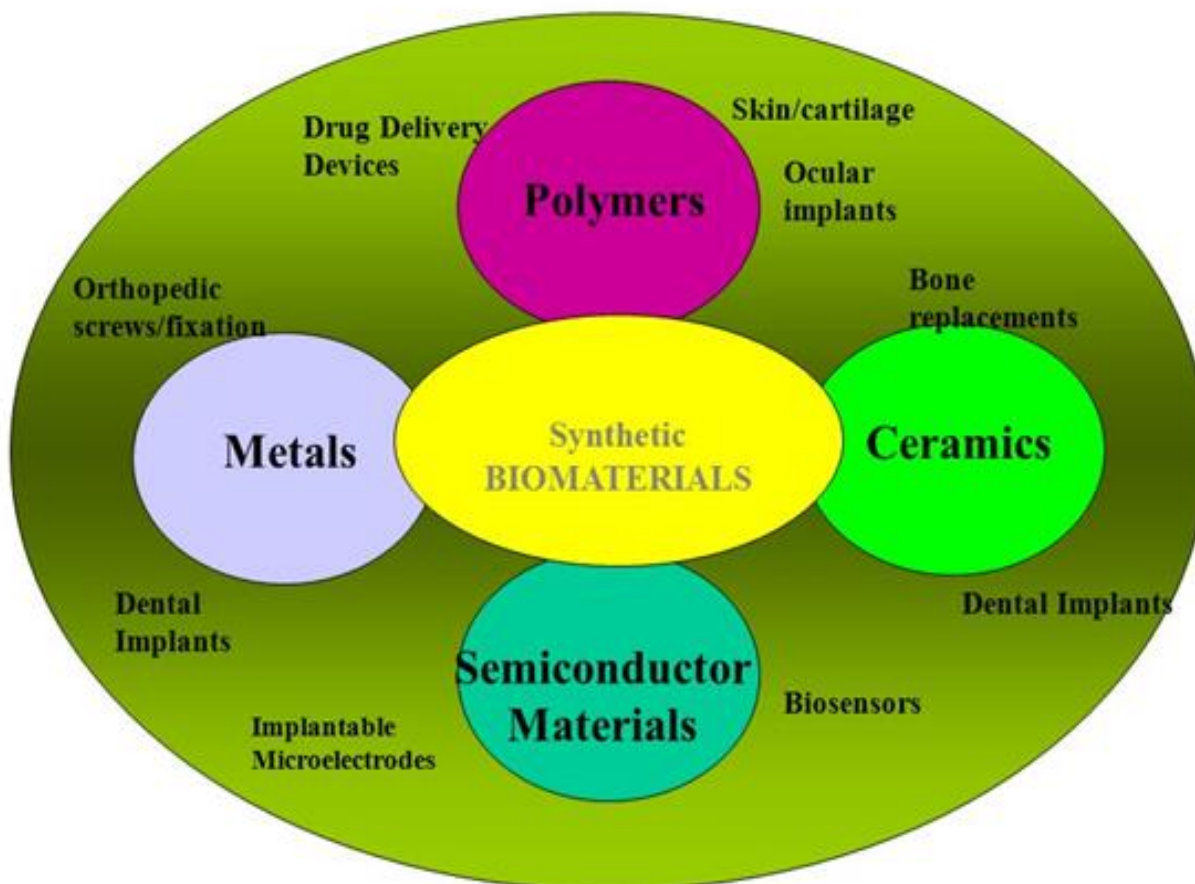


Fig 1: Synthetic Biomaterial

II. ARTIFICIAL BIO MATERIALS

Artificial organs are generally defined as any device, machine or complex biological structure which is partially or completely synthetic in nature and that could be implanted or integrated into human body to perform the tasks of a particular biological structure ^{which} has been damaged and should be replaced due to some medical reasons. The scientists are continuously working to procure newer, safer and cheaper pathways to fabricate artificial organs which could curtail the time for organ transplant and transform the surgery. A brief description of sundry artificial organs is as follows:

Artificial Bone:- it is a bone like synthetic material which is used as bone grafts in order to replace the human bones that was lost because of disease or severe fractures. The mutilated bone can be replaced by autografts (bone from the other parts of the body), allografts (bone from cadavers), megagrafts (various bioceramics), callografts (hydroxyapatite/tricalcium phosphate and bovine collagen) and metallic alloys.

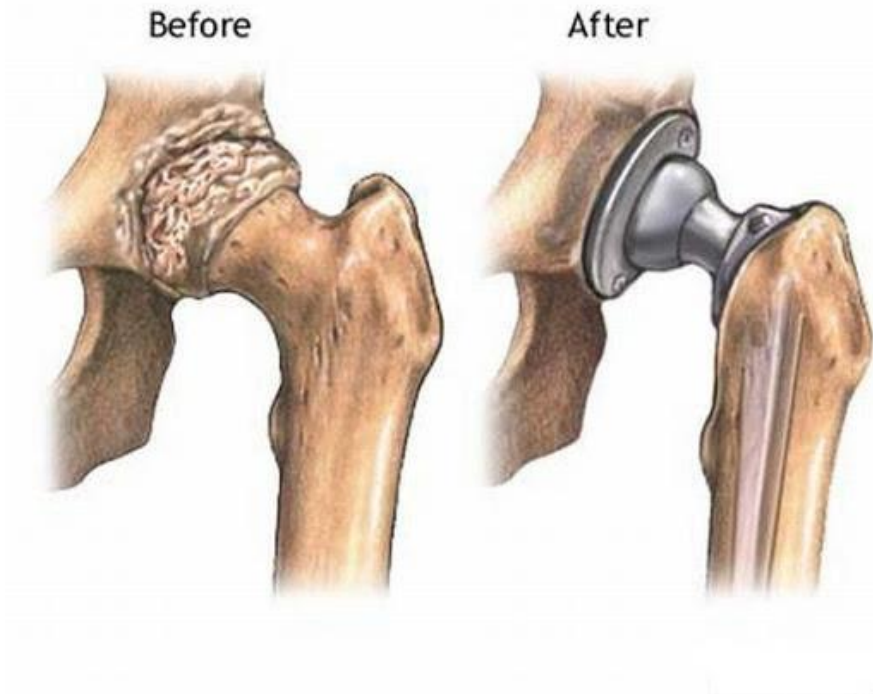


Fig 2: artificial Bones

Artificial Kidney:- Commonly it is mechanical device which cleans the patient blood who is suffering from severe renal diseases or kidney failure. It removes waste products, excess water and salts from human body. Implantable artificial kidney is a bio hybrid device which imitates the function of a healthy kidney. Wearable artificial kidney is a wearable dialysis machine that can be used continuously or daily basis. Various polymers, copolymers, hallow fibers and silicon nanotechnology have been used to fabricate artificial kidney.

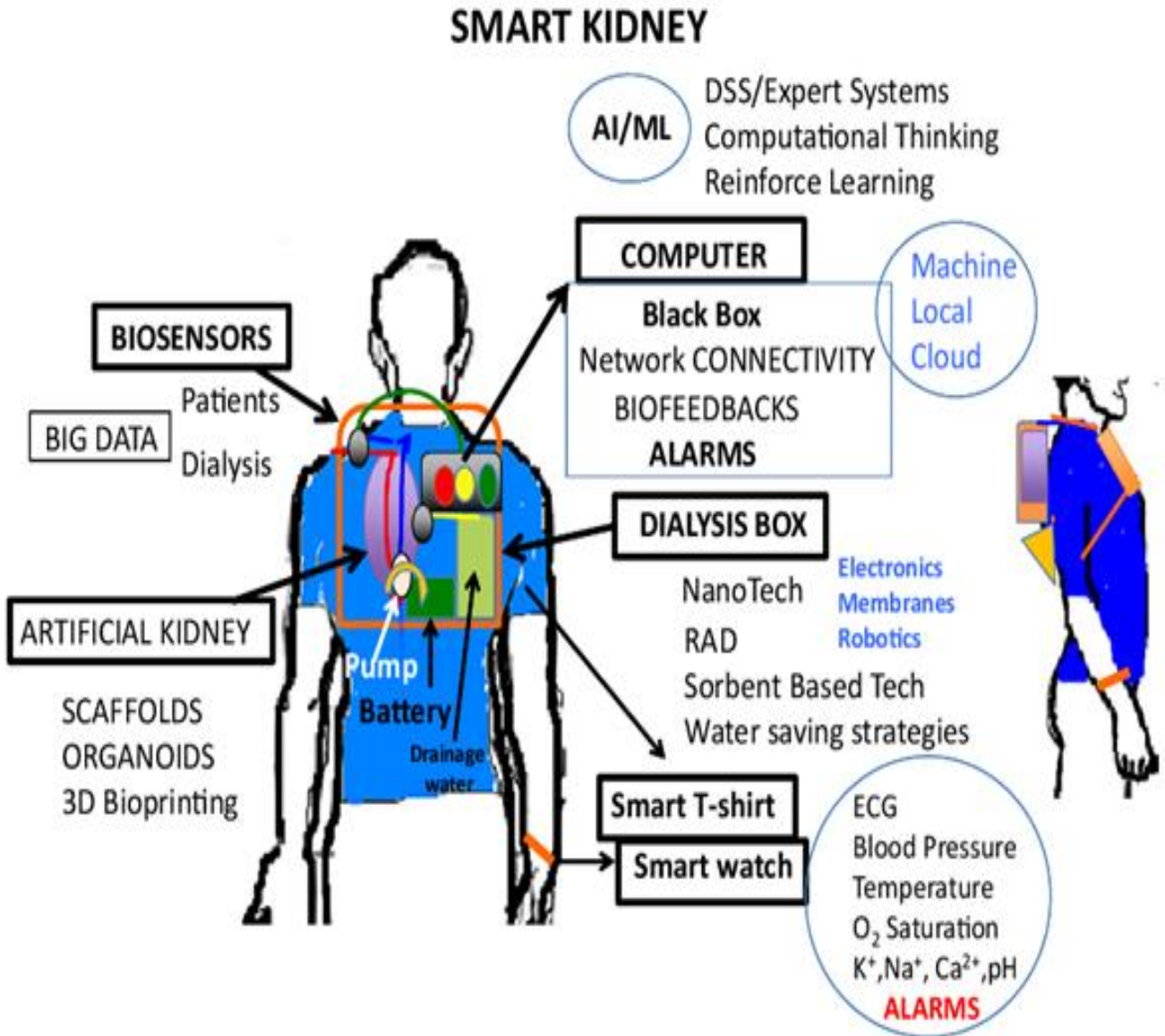


Fig 3: artificial kidney

Artificial Liver:- it is a supportive device which either gives time to liver for regeneration or bridges the patient's liver functions till transplantation. Generally bio artificial livers are bioreactors that are embedded with hepatocytes and these hepatocytes perform normal functions of liver. BAL includes hollow fiber cartridge and the suspension of hepatocytes in gel solution like collagen is injected to hollow fiber matrix. Flat membrane sheet systems are also being developed.

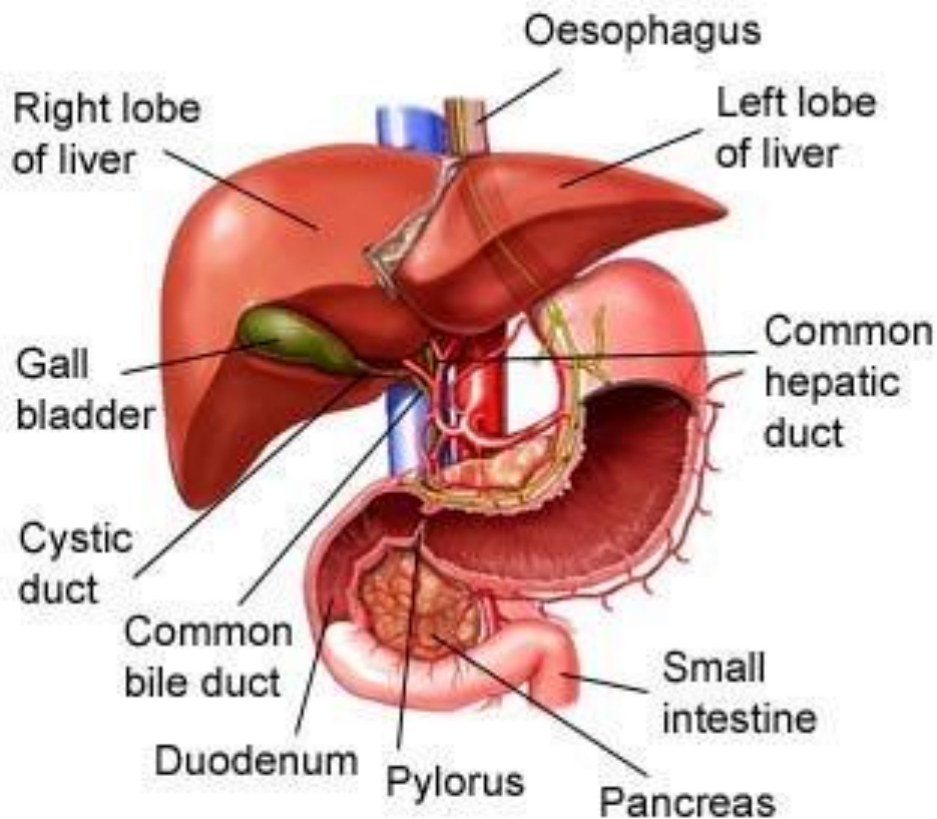


Fig 4: Artificial Liver

III. CONCLUSION

In this paper we have discussed about artificial biomaterial. Artificial bio materials are significantly important in the development of artificial organs. Various artificial organs like bone, heart, kidney, liver, lung, pancreas, skin, urinary bladder, auditory brainstem implant, bionic contact lens, cochlear implant, direct acoustic cochlear implant, retinal implant and visual prosthetic parts have been developed.

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