Technology Offer

Bioactive and antibacterial coating for dental implants

Summary

Slovenian research institute has developed a process for coating titanium or any titanium-based alloy bone implants with a protective and bioactive coating that can be also produced in a form with antibacterial properties. The powder itself has high specific surface area and is therefore highly soluble in liquid media. The coating is useful especially for dental implants. The institute is looking for industrial partners interested in technical cooperation- and license agreements.

Creation Date	23 July 2015
Last Update	17 August 2015
Expiration Date	16 August 2016
Reference	TOSI20150723001

Details

Description

A group of Slovenian researchers has developed a new bioactive and antibacterial coating for dental implants.

The low-temperature process for coating of titanium or titanium-based alloy with the coating is simple and can be performed in a single step. The formed crystalline oxide coating is strongly attached to the substrate, provides more favourable surface properties to the implant than the state-of-art as it is hydrophilic, promotes hydroxyapatite formation and cell attachment and it hinders release of alloying metal ions into the surrounding tissue. In addition, it may acquire antibacterial effect.

The coating can be used for any kind of Ti or Ti alloy implants, especially for dental implants to stimulate bone ingrowth and to improve implants' longer-term behaviour.

The institute is looking for industrial partners interested in further development under the technical cooperation agreement and those interested in in-licensing of the bioactive antibacterial coatings for dental implants.

Advantages and Innovations

The problems and deficiencies of implants that are currently in use are:
- Metals and therefore metal implants have hydrophobic surface which is not favourable for cells attached, in particular in the case of the rough or porous surface
- Metal ions are leaching from the implant into the body
- Titanium metal and Ti-alloys are not bioactive

The advantages of the offered new bioactive multifunctional coating material are:

- Coated metal implants are hydrophilic, thus providing more favourable surface for cells
- Its bioactive properties accelerate bone formation
- Leaching of harmful metal ions is reduced
- Antibacterial properties lower the probability of infection

Stage of Development

Under development/lab tested

IPR Status

Secret Know-how

Profile Origin

FP7

Keywords

Technology

02002002	Coatings
02007024	Nanomaterials
05005	Micro- and Nanotechnology
06001004	Dentistry / Odontology, Stomatology
06001013	Medical Technology / Biomedical Engineering

Market

05003003	Surgical implants
05005017	Dentistry / Odontology, Stomatology

NACE

M.72.1.1	Research and experimental development on biotechnology
M.72.1.9	Other research and experimental development on natural sciences and engineering

Dissemination

Send to Sector Group

Bio Chem Tech

Client

Type and Size of Organisation Behind the Profile

R&D Institution

Year Established

1949

Turnover

20 - 50M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
Slovenian

Client Country

Slovenia

Partner Sought

Type and Role of Partner Sought

- Type of partner sought: industry

- Specific area of activity of the partner: Ti or Ti alloy implants, especially dental implants with coatings to stimulate bone ingrowth and to improve implants' longer-term behaviour.

- Task to be performed by the partner sought: Industrial partners interested in further development under technical cooperation agreements and those interested in in-licensing of the technology.

Type and Size of Partner Sought

SME 11-50,SME <10,>500 MNE,251-500,SME 51-250,>500

Type of Partnership Considered

License agreement
Technical cooperation agreement

Technology Offer

Standardized skin disinfection set

Summary

Skin disinfection procedures in hospitals are still lacking a standardized handling. A medical department at a German university developed an easy-to-handle and standardized skin disinfection set, using a two chamber system. A pre-defined volume of disinfection fluid is introduced in the second chamber with foam swabs upon pressure. By releasing the pressure uniformly soaked foam swabs are created, this avoids dripping of disinfectant. A license agreement is offered to interested companies.

Creation Date	26 August 2015
Last Update	02 September 2015
Expiration Date	01 September 2016
Reference	TODE20150826001

Details

Description

Current disinfection procedures are not standardized. If the prepared amount of material is insufficient the procedure has to be carried out a second time and dripping disinfectant has to be absorbed. Therefore, more swabs and disinfectant are used than needed, resulting in unnecessary waste of material. This is potentially also resulting in insufficient disinfections, especially at the surgical site.

Therefore, scientists at a well-known medical department at a German university have developed an easy-to-handle and standardized skin disinfection set. The set is made of two separate chambers in a complete sterile system. A pre-defined volume of disinfection fluid is introduced in a second chamber with foam swabs upon pressure (preferred mode of action). Releasing the pressure will result in uniformly soaked foam swabs just to their capacity to avoid dripping of disinfectant.

Figure legend:
Preferred mode of action for disinfection set:
A) The first chamber containing disinfectant is mounted onto the second chamber containing the swabs. The chambers are transversally movable connected.
B) Forming a passage or through-hole by pressing the first chamber down, the disinfectant is introduced into the second chamber. After depression, disinfectant can flow into the second chamber and the swabs are uniformly impregnated with the disinfectant.

Applications for the disinfection set for skin disinfection and wound care are in surgery (inpatient as well as outpatient), in nursing homes, as part of first aid kids and in conflict areas (military, aid organizations). Different designs and prototypes were developed and handlings were tested.

The university offers a license to industrial partners from the medical sector interested in the application of the developed technology.

Advantages and Innovations

- Uniform distribution of disinfectant
- Same volume of disinfectant for all swabs
- No dripping
- Easy handling
- Maintaining sterile conditions
- Cost-saving manufacturing

Stage of Development

Prototype available for demonstration

IPR Status

Patents granted

Comment Regarding IPR status

Patents are granted in the USA, Germany, Spain, France, Switzerland, Great Britain and Italy

Profile Origin

Other

Keywords

Technology

06001007	Emergency medicine
06001012	Medical Research
06001017	Surgery
06001021	Single Use Products and Consumer Goods

Market

05004002	Rescue and emergency equipment
05004006	Surgical instrumentation and equipment
05005013	Emergency medicine
05005019	'Surgery and Anaesthesiology
05007001	Disposable products

NACE

M.72.1.1	Research and experimental development on biotechnology

Dissemination

Send to Sector Group

Healthcare

Client

Type and Size of Organisation Behind the Profile

University

Year Established

0

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
German

Client Country

Germany

Partner Sought

Type and Role of Partner Sought

- Type of partner sought: medical industry

- Specific area of activity of the partner: (disposable) medical products, disinfection products

- Task to be performed by the partner sought: evaluate the technology followed by negotiation of a license agreement

Type of Partnership Considered

License agreement