

INVITATION TO BID FOR TRANSFER OF TECHNOLOGY OF “FORMULATION COMPRISING METALLOCATANIONIC VESICLES ENCAPSULATING PHOTSENSITIZER DYE”

A team of scientists from Panjab University (PU), Chandigarh have successfully developed “Formulation comprising metallocatanionic vesicles encapsulating photosensitizer dye”. The technology has been granted an **Indian patent** and at **TRL4**.

These are water soluble formulations that can be synthesized by an easy, fast, and inexpensive method and have an excellent antibacterial activity against *Gram-positive* and *Gram-negative* bacteria. These can be used as disinfectants or a sterilization chamber, that work under visible light (irradiation of visible light (5 to 10 min) or even sunlight), can be fabricated. Spraying this formulation on our daily use items such as (keys, mobiles, headphones, shoes, daily used bottles, laptops, etc.) can be clean the surface with 99% efficiency against broad spectrum microbes (including bacteria and fungus). This formulation can be used alone as a spray (used as a disinfectant) to clean objects and various surfaces or can also be used by employing sterilization chamber for sterilizing medical and surgical instruments. It is a nontoxic formulation and can act as a replacement of harmful chemicals that are available in market having benzyl derivatives. Moreover, it will replace the available harmful UV light-based technology for sterilization. This will provide an alternative approach to combat bacterial infection without creating resistance with improved efficiency.

Details of the formulation may be found below:

Patent Details

Application No.: 201911035464, Date of Filing: 03/09/2019 Patent No: 388712

Publications in Journals

- 1) *Biomaterial Science*, 2020, 8, 2905-2920.
- 2) *J. Mater. Chem. B*, 2020, 8, 9304-9313.
- 3) *J. Mol. Liquid*, 2020, 114688.
- 4) *ACS Appl. Bio Mater.* 2020, 3, 12, 8515–8524.
- 5) *J. Mol. Liquid*, 2022, 345, 117818.
- 6) *J. Mater. Chem. B*, 2022, 10, 2160-2170.

Specifications

An easy, cost effective and greener approach to fabricate the metallocatanionic vesicles that are

- a) water soluble in nature (usually metallosurfactants are not)
- b) have control size and surface charge
- c) have antimicrobial activity against board spectrum of microbes.
- d) encapsulate both hydrophilic and hydrophobic drugs/photosensitizers
- e) no harmful chemicals are involved (like benzyl salts). Preparation is done from already known materials and thus these materials resolve the problem of resistance in bacteria.

Applications

- Can be used as disinfectants
- Can be used with sterilization cabinets to be used in offices, houses, hospitals and public places (this will increase efficiency)
- It enhances the photodynamic efficiency of the photosensitizer drug as well as act as a delivering agent for delivering drug.
- The present invention claims for the utilization a formulation which is prepared from the already available material in the market.

- For commercialization, no new industrial set up or infrastructure is required. The mass production is easy and so is the scalable process.
- No harmful chemicals are involved.
- It's a non-alcohol based formulation. Alcohol based formulations have already developed resistance and was banned by WHO before COVID-19 pandemic. It is very important to have water based formulations especially after so much exposure to alcohol based formulations during this pandemic.
- The detergent composition eliminates prominent bacteria and fungi with high efficiency and in lesser time.

Present Status

- Present Technology Readiness Level TRL4 (Technology Validated in lab)

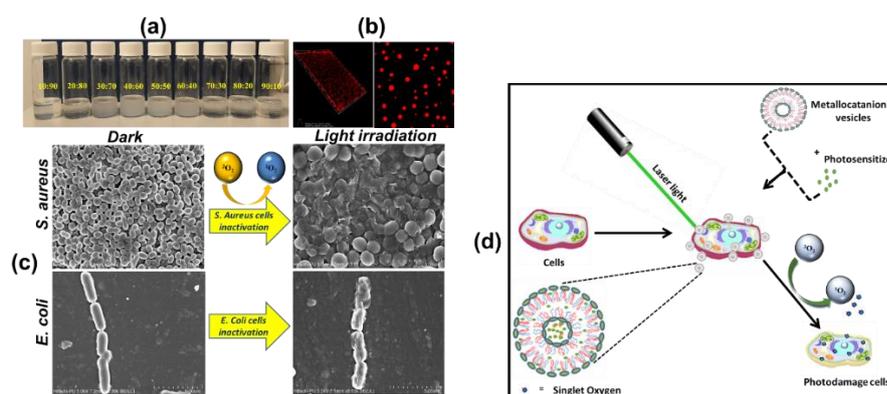


Figure: (a) Picture of the prepared formulation, (b) Microscopy images of the formulation loaded photosensitizers, (c) photoinactivation of bacteria in presence of MCVs loaded photosensitizers and (d) mechanistic representation of the bacterial cell killing.

Transfer of Technology

The Inventors of technology are planning for ‘Transfer of Technology’ (ToT) for commercialization and are in process to shortlist the manufacturers in different region of country for fabrication of formulation and cabinets for commercial use within the country as well as globally, as per the following broad terms and conditions.

1. The Transfer of Technology will be through a mutually acceptable Agreement document, to be signed by the inventors (i.e. Licensor) and a representative of the company (Licensee) authorized to sign on behalf of the company. Once the Agreement is signed, the inventors will share the relevant information regarding synthesis, characterization etc.
2. The Inventors of the technology (Licensor) will grant to the Licensee a limited, non-exclusive, non-transferable, non-sublicensable, revocable license to the Technology, for the purpose of commercialization of the technology as quickly as possible.
3. The Licensee is expected to commercialize technology in the market within 6 months of execution of the Agreement (i.e. Transfer of Technology) at a reasonable price. The technology and its components should be as per standard grade, and be compliant with the relevant national standards.
4. Failure of adherence to this timeline, and documentation of monthly milestones will be a sufficient reason for unilateral cancellation of the Agreement by the Licensors.
5. The Licensee is expected to make an offer (i.e. bid) of a one-time payment of **License fee** to the Licensor, not less than **5 Lakhs**.

6. **Royalty @ of 4 % of net sale price** is to be paid to the Licensors by the Licensee, after every 6 months, during tenure of the Agreement.
7. Licensor will make efforts to support the Licensee during the process towards commercialization by helping licensee in scaling of formulation and product at pilot plant level through emails and in-person visits.

Invitation to Bid

Reputed companies should submit the following information in response to this invitation:

1. A brief description of the company and products/services of company.
2. Audited balance sheet of three immediate past preceding years', including profit and loss account and annual report.
3. Reference list of similar engineering supplies of fabrication and services during past 2-3 years
4. A notarized affidavit conforming that the company has not been banned or blacklisted at any time for supplies to government agencies
5. Bid/offer of License Fee and Royalty (minimum expectation already mentioned above).
6. Clear vision and roadmap towards commercialization, with timelines.
7. Scope of shortening the above-mentioned timelines.
8. Anticipated price of the product in the market

Interested companies are requested to apply with all the required documents through email with subject "Bid for ToT" to pu_tec@pu.ac.in latest by 31st July 2022.



For further information please contact

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