

Novel non-vascular stent: Economical, removable and self-expandable

EXECUTIVE SUMMARY

CSIR-NCL has developed a new class of self-expandable stents based on a novel scroll design. It is made of simple polymer-metal composites which meet the characteristics of commercially available shape memory alloy-based stents. Developed stents are 10-20 times economical as compared to commercial ones. Completed corrosion, abrasion, radio-opacity test & biocompatibility studies (As per ISO 10993 protocols)

BACKGROUND

- Two kinds of stents are used extensively in the treatment of numerous biliary tract diseases
- Plastic stents: Removable & economical, but non-expandable & gets clogged (lower patency)
- Self-expanding plastic stents (SEPS) are 6-10 times costlier than plastic ones
- Self-expanding metallic stents (SEMS)- self-expandable, longer patency but Non-removable and not affordable because of expensive raw material (nitinol) & manufacturing process
- There is a pressing need for low-cost stents which offers features of self-expandable metal stents

TECHNOLOGY KEY FEATURES

- CSIR-NCL has developed a new class of self-expandable stents with novel scroll design
- Key Features**
 - Economical:** 10-20 times lower in price
 - Removable & self-expandable:** In vitro study
 - Longer patency:** Expected to be similar to the available self-expanding stents
 - Raw material:** Polymeric-metal composite
 - Process:** Compression molding

CSIR-National Chemical Laboratory, Pune, India

MARKET POTENTIAL

- The global non-vascular stents market is expected to reach 1350 mil US\$ (2018-2025) with a CAGR of 4.7%¹

VALUE PROPOSITION

- Cost-effective:** 10-20 times economical as compared to commercially available
- Affordable materials & simple manufacturing process
- Self-expandable with a novel design
- Meet the characteristics of commercial shape memory alloy-based stent
- IP protection with multiple patents

APPLICATIONS

- Stents for the GI tract:** Primarily for **esophagus**; can be extended to other regions

TECHNOLOGY STATUS

- Technology & patents are available for licensing`
- A platform design is optimized for the esophageal region; can be extended to other regions
- Successfully completed corrosion, abrasion, radio-opacity test & biocompatibility studies (As per ISO 10993 protocols)
- Patents:** **IN2463/DEL/2015, WO2017081704, US20180369003, EP3373866**

REFERENCES

- Global Non-Vascular Stents Market Outlook 2018-2025 : Industry Trends, Analysis, Opportunities, Sales, Segmentation, Revenue and Forecast
(<https://www.reportsbuzz.com/62044/global-non-vascular-stents-market-outlook-2018-2025/>)

