From Science to Bioactive Medical Device Product

V. Dudnyk

Covalon Technologies Ltd.
405 Britannia Road East, Suite 106,
Mississauga, Ontario, L4Z 3E6,
Canada

Over the last decade, a lot of scientific research lead the medical device industry to new directions for product development.

The big jump from inert materials that keep the immune response and the foreign body reaction to a minimum to the materials that exert an effect on biological components to elicit a specific response or behaviour. This class consists of devices which contain drugs or specific molecules which change surface properties. These drugs come from the scientific laboratories and open new possibilities as devices with regulated drug elution profiles. Antimicrobial Foley catheters, wound dressings and cover dressings apply this technology to market selling products.

The new materials designed to elicit specific cellular responses at the molecular level, while also being potentially resorbable is on the way in labs. Regulated drug eluting catheters and self-sterilizing surface coatings are types of products that fall under this category. In addition, multilayer wound dressing materials with varying modes of action in wound healing are also under development; an initial contact layer containing a blood coagulant stops bleeding, the next layer intensifies skin tissue regeneration, and the inclusion of a scar preventing agent for addressing the final step of healing.

Big step from science and lab to mass production that the processes should be robust, stable, controllable and inexpensive. In spite of this, a lot of scientific researches with the synergy of biology, chemistry, physics, microelectronics, engineering and nanotechnology provide the opportunity to develop absolutely new medical products which are both innovative and commercially viable.