

Mauritius Island – An Emerging Centre for R & D in Biotechnology and the Life Sciences

Mauritius, the tropical island situated in the Indian Ocean and known worldwide for its beautiful beaches, is also internationally recognised for its rule of law, and political and social stability. Over the past few years, the economy has been successfully transitioned from a monocrop to a diversified innovation-driven and knowledge-based economy, resting on agribusiness, export-oriented manufacturing, tourism, financial services, property development and real estate, ICT-BPO, the seafood industry, a free port, logistics and a nascent ocean economy. Emerging sectors such as healthcare and life sciences are presenting some niche areas for the taking, and the enabling environment is being put in place to make it happen - especially in the light of sustained growth within pharmaceutical, medical device, and clinical research.

Important international players are already in operation locally as the country has established the appropriate legal and regulatory frameworks based on international norms, for the development of a strong biomedical research sector.

Emergence of Pharmaceutical and Clinical Research Sectors

While endowed with a small but increasingly affluent local population, Mauritius has secured preferential access to markets worth several hundreds of millions of consumers. With the EU, through the Cotonou agreement; with the US, under the AGOA (Africa Growth and Opportunity Act); with Eastern and Southern Africa, through the COMESA (Common Market for Eastern and Southern Africa) and SADC (Southern African Development Community). The business relationship that Mauritius shares with these countries is an appealing factor for pharmaceutical companies.

To date, one emerging sector is the environment-friendly manufacture of medical disposables, which includes surgical equipment such as syringes, gloves, blades, clamps, gauze sponges, sterile packaging, bandages, disinfecting materials, test strips, stents, disposable dishes, and many others. It is worth pointing out that leading medical devices manufacturers from Europe have set up their manufacturing units in Mauritius, which now accounts for 5% of the world's catheters for angioplasty, as well as silicone implants, dental crowns, electrotherapeutic and ophthalmic devices, among others. The industry is gaining momentum as further development in the sector is expected in the coming years.

Another vision of the Mauritian government is to transform Mauritius into a medical hub. Thus, the medical research sector is poised to become an important component in the gradual transformation towards the knowledge and innovation-based economy. The promulgation of the Clinical Trials Act in 2011 has paved the way for contract research organisations (CROs) to carry out clinical trials activities in Mauritius. The pending enactment of the Preclinical Research Bill will no doubt boost R & D within the pharmaceutical research value chain.

The Clinical Trials Act has already enabled applied biomedical research to be carried out as per international norms. Three main committees act as regulatory bodies for clinical trials, namely the Clinical Research Regulatory Committee, the Ethics Committee and the Pharmacovigilance Committee.

CROs are showing a growing interest in using Mauritius as a platform for conducting clinical trials with the Ministry of Health and Quality of Life overseeing these activities. Only one CRO is presently active in the Mauritian territory and fully benefits from a wide panel of multi-ethnic volunteers spanning a wide range of pathologies. Sixty-eight per cent (68%) of the Mauritian population is of Indian descent, 33 % of African origin, 3% Sino-Mauritian and 2% have European roots.

In Mauritius, the main clinical development areas are:

- Diabetes and cardiovascular diseases: there is currently a high prevalence of metabolic, cardiovascular and lifestyle-related diseases - a survey performed in 2009 indicated that approximately 23.6 % Mauritians suffer from diabetes.
- Orphan diseases such as palmoplantar Keratoderma and Lamellar Ichthyosis.
- Dermatology diseases: Mauritius, with diverse population groups, presents a variety of chronic skin conditions such as acne or psoriasis, as well as pigmentation disorders such as melasma or vitiligo.
- Infectious diseases: Mauritius offers an ideal platform for the study of emerging tropical diseases. One such spate included Chikungunya and Dengue, for example.

The evaluation of the cytotoxicity of new ingredients and finished products during their development is a critical point for the industry. Risk assessment is mandatory for chemicals registrations (e.g. under REACH) and for clinical testing. Following the European Union regulatory deadline (7th Amendment to the Cosmetics Directive) and ethical considerations, animal and human testing is now replaced by alternative techniques including *in vitro* assays and chemical testing.

Mauritius also benefits from a unique eco-region of the Mascarene islands in close proximity to the African continent, which constitutes one of the global biodiversity hotspots. It is blessed with rich and diverse traditional practices.

Recognising the demand for novel ingredients for the cosmetic, pharmaceutical and nutraceutical sectors, centres for phytotherapy research have been set up to cater for this niche area. They propose to bring to the world novel aromas, cosmetics, drugs and therapies from the locally-used medicinal plants. By using their expertise to add value to ancestral traditional knowledge on locally-used and lesser-known plants, they promote the sustainable use of biodiversity and provide leads for the above-mentioned sectors. Mauritius' objective is to validate the rich biodiversity in this unique eco-region, and to propose comprehensive portfolios for the above-mentioned sectors, and help promote the development of innovative products.

Way Forward

In light of the state-of-the-art facilities and highly-qualified personnel providing comprehensive high-end medical care in Mauritius, the Board of Investment (BoI) - which is the local national investment

promotion agency - is now actively positioning Mauritius as a platform for biomedical research. In this vein, BoI regularly organizes major conferences (IOR-ARC 2013, Bio Africa 2014) to showcase the opportunities that the Mauritian biotechnology sector has to offer.

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