

# Research and Development

We believe that innovation is the catalyst for long-term growth and success. Our research and development (R&D) initiatives in all three divisions foster innovation and gives us an advantage over our competitors in today's ever-changing business environment.

On the pharmaceutical front, CCM's state-of-the-art R&D centre, Innovax Sdn. Bhd. underwent a restructuring exercise through the appointment of a new General Manager and the formation of various departments including Regulatory Affairs, Quality Assurance and Pipeline, Analytical R&D and Formulation R&D that play a vital role in ensuring our pharmaceutical products meet the highest standards of safety and quality. Last year, Innovax submitted product dossiers consisting of eight ethical and five over-the-counter (OTC) products with stability data to safeguard their quality throughout their intended shelf-life in an effort to expand our product pipeline. The R&D centre also handled six renovation projects and completed eight products scale-up to support our product development goals. Besides that, Innovax received a certification from the Fire and Rescue Department for meeting the Department's fire safety requirements and is currently working towards obtaining certification from the Department of Occupational Safety and Health to enhance occupational safety and health awareness among employees at the facility.

CCM Biopharma Sdn. Bhd., a wholly owned subsidiary of CCM Pharmaceuticals Sdn. Bhd., inked a Memorandum of Collaboration with TS Corporation of South Korea to commercialise a range of biological products for the domestic and ASEAN markets. Under the collaboration, CCM Biopharma will undertake commercialisation activities of biological products including Erythropoietin (EPO) and related end-products, with a view of marketing the end product in Malaysia and the ASEAN region via bulk supply and technology transfer from TS Corporation. The project will also include a technology transfer training programme, conducted on a laboratory scale of pilot degree at the TS Corporation site. The collaboration allows CCM Biopharma to leverage on TS Corporation's latest technology information and technology transfer in the manufacture and commercialisation of these biological products.

In an attempt to promote CCM's halal initiative, we also participated in the *World Halal Research Summit 2010*, an international conference that provides the latest updates in the development of new research findings, upcoming technologies,

emerging trends, issues and challenges in the halal industry. During the three-day event, CCM Pharmaceuticals Division Director, Leonard Ariff Abdul Shatar, delivered a presentation entitled, "CCM Championing Halal Pharmaceuticals" to the participants that consisted of researchers, scholars and academicians from various countries.

The Chemicals Division marked an important milestone for CCM when our subsidiary, CCM Water Systems Sdn. Bhd.'s technological solutions were employed in an initiative by the Rural and Regional Development Ministry to provide 13 units of compact ultrafiltration water treatment systems to Orang Asli from 21 settlements in Perak and 23 units to 23 settlements in Kelantan, giving the villagers access to safe and clean water supply. The water treatment systems use ultrafiltration (UF) technology which are also used in most developed countries to effectively improve the quality of water by removing bacteria, viruses and microorganisms. UF technology eliminates suspended and dissolved solids that have different molecular weights and sizes from water. It produces water that is of better quality compared to water processed by conventional treatment systems such as sand filtration. Conventional systems normally use sand filters with a large pore size of about 20 to 30  $\mu\text{m}$  to strain impurities while UF has a much smaller pore size (up to 0.01  $\mu\text{m}$ ). The UF membrane develops a barrier that prevents bacteria and other microorganisms from penetrating, hence providing bacteria-free water. Thanks to the mobile treatment systems, the villagers now enjoy clean water for drinking and basic sanitation, thus enhancing their living conditions and their overall well-being.

Meanwhile, CCM's Fertilizers Division achieved another technological breakthrough when CCM Fertilizers Sdn. Bhd. and the Malaysian Agricultural Research and Development Institute (MARDI) successfully collaborated to produce a paddy booster, GROMAX Paddy which enhances grain yield by increasing grain-filling percentage by as much as 75%. GROMAX is based on Nitro Humic Acid (NHA), a bio-chemically active macro-molecule which is used as a soil conditioner, coagulating agent and media for foliar fertilizer formulation, is proven to improve soil fertility, increase plant nutrient uptake, stimulate soil biological activities and enhance enzymatic activities that promote the plant's photosynthetic efficiency. The effort not only demonstrates CCM's commitment to raise technology and innovation to another level but also contribute to the country's agriculture industry and economic development.