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Process Analytical Technology (PAT) for the traditional herbal drug industry

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Abstract

It is apparent that currently there is a mounting universal demand for the herbal products. The global population now longs for complementary therapies and traditional drug alternatives for any disease or disorder having far reaching consequences. Plant-derived medicines act as the principal healthcare source for the developing countries and people, especially in rural areas, have put significant trust on these alternative medicines. The reasons are mainly two-fold: process economics is comparatively cheaper and absence of rigorous product control that is correlated with the utilization of conventional plant medicines in comparison to the modern medicines. Irrespective of the initial and crucial raw material, several western countries have enforced strict Good Manufacturing Practices (GMPs) and quality control steps on drug products obtained from any manufacturing procedure. However, the unrestrained applications of complementary herbal medicines are hindered by numerous factors such as non-efficient quality assurance implementation in the production process; lack of traceability in the supply chain and incompetent classification of molecular species that affect the curative effectiveness of the ultimate product. There is no quantifiable, contributory and analytical relationship between the raw materials, the manufacturing process and the final product quality. With this motivation, we propose some solutions which may be implemented by the herbal drug industry to broaden its worldwide reach and maintain its integrity. Mainly among them is the implementation of Hazards Analysis and Critical Control Point (HACCP) in the production process and inclusion of Process Analytical Technology (PAT) for ensuring appropriate synthesis procedure of phytotherapeutics.

Biography

Mr. Sharadwata Pan has completed his Dual Degree – Bachelor of Technology and Master of Technology in Biotechnology from Jaypee Institute of Information Technology, Noida (U.P.), with an Institute 3rd Rank in the Dual Degree Programme. After this, he has worked as a Faculty in a Govt. University in West Bengal. Currently he is working as a Senior Research Fellow both at IIT Bombay (India) and Monash University (Australia), in a joint PhD programme. Till date, he has 40 publications in highly reputed (refereed) journals and (peer-reviewed) conference proceedings and is a scopus-indexed author. He is also a proud 'Oskar-winner (2009)' of the IIT-B Monash Research Academy, at IIT Bombay. Mr. Pan is highly interested in the quality approach and quality addressing issues for complementary and alternative medicines.