Omics Tools for Quality Control of Herbal Medicines in West Africa – The Role of Molecular Biology

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Abstract

Processes that control life at the molecular level are Phenomenal Progression worthy of studying. Herbal Medicines, particularly in West Africa are natural remedies used extensively for the prevention and treatment of diseases and are increasingly in high demand due to the high cost of orthodox drugs and their prolonged side effects.

Omics is the new mantra for molecular biology. It is a high throughput technology that includes genomics, transcriptomics, proteomics, and metabolomics which facilitates the simultaneous detection of more genes and proteins as well as relating complex effects via gene/protein expression (Debnath et al, 2010). They are used for the identification of biomedical resources such as genomic techniques in DNA sequencing and fingerprinting or DNA microarrays, all the research works are mainly related to biological issues mostly addressing the corroboration and quality control of herbal products.

One of the most remarkable applications of proteomics, for example, in herbal medicine is the capability of this technique to identify different species. These applications would be very valuable tools for quality control, toxicity studies, and standardization of herbal preparation. Many DNA polymorphism-based assays are developed for the identification of herbal products. DNA is amplified by polymerase chain reaction (PCR). DNA chips with DNA sequences proved to be a more powerful tool that could also be used for analyzing mixed herbal preparations. Gene chip technology, also one of the most powerful tools for elucidating the molecular mechanism and the network underlying the complex pharmacological function of these herbal preparations.

In conclusion, the emergence of several technologies has helped in the modernization of traditional medicines. Although still evolving and developing, OMIC technology has proven to be a powerful tool in the modernization of herbal medicine.

References

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