

Chapter 7

Biotechnology and Wealth Creation from Plant with Healing Properties

ABSTRACT

The relevance of traditional healing in genomic science pertain to the use of specific herbal remedies which are therapeutic for the management of endemic diseases in developing and the least developed nations. Besides the therapeutic resources of the healers were discussed and in nature of their therapeutic modality was characterized. The physical, mental and social psychological model of traditional healing was developed. It was recommended that genomics specifically true sequencing could be applied to identify the phytochemical agents which are present in many of the herbs which traditional healers use. Among those herbs, those that are lethal and toxic to patients should be expunged.

In this chapter, we meticulously assessed the definition of biotechnology regarding wealth creation from natural resources, principally from plants with healing properties. The ecological niche in West Africa was adopted as a prototype of many of the developing and least developed countries of the world, where existing sophisticated technological resources are quite scanty. To augment our philosophical bent, we utilized, the World Health Organization Resume- of- Research in traditional medicine which has been in existence for well over three decades to guide the activities of traditional healers and other herbalists. The Physical-psychological model of traditional medical practice developed by Ebomoy, (1982) delineates the benefits of traditional healing and problems areas to skirt in an effort to guard against the activities of unscrupulous quacks among the inefficient healers. We have advocated the application of bio-fortification techniques to enhance the active principles in these plants, while minimizing the size effects of herbal drugs to their unsuspecting patients. Concerted efforts and global initiatives are required to protect plants with healing properties from extinction owing to deforestation and prospecting for petrochemical products and incessant pollution of the aquatic ecosystem of the developing and the least developing areas of the world. From mutual global collaboration, protection of the ecological niche of these tropical medicinal plants could play therapeutic role in the treatment of intractable diseases with limited side-effects.

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DEFINITION OF BIOTECHNOLOGY

Biotechnology has several definitions and depending on the topic of interest, biotechnology can be defined to illustrate some unique application of biotechnological methods. Adopting the technical application, biotechnology can be defined as "the use of biotechnical methods to modify the genetic material of living cells so they will produce new substances or perform new functions. The most widely used definition of biotechnology focuses on "biotechnology as the use of living organisms to make a product or run a process. This definition includes using bacteria to make yogurt, cheese, and vinegar as well as the use of plant or animal cross-breeding techniques to produce stock with enhanced qualities" The New Zealand Technology Curriculum (1995) defined:

Biotechnology, as the use of living systems, organisms, or parts of organisms to manipulate natural processes in order to develop products, systems, or environments to benefit people. These may be products, such as foods, pharmaceuticals, or compost; systems, such as waste management or water purification; or environments, such as hydroponics. Biotechnology also includes genetic or biomedical engineering.

We must reiterate, how genomic science, since 1990 has created major biotechnological revolution after the accomplishment of the human genome sequencing by 25th 2003 March. Reports from the National Institutes of Health and the United States Department of energy have further revealed how the biotechnological industries have more than tripled in size between 1992 and 2001. Besides, owing to the availability sophisticated technology in the G-8 nations, biotechnological and genomic applications have created an upsurge in revenue which increased from 8 billion to 27.6 billion. Only in 2001, there just 191,000 United States employees, and now more opportunities are expected in healthcare, microbial genomics for the sequestration of carbon and clean-up of the environment and food production.

In United States and other highly industrialized nations, young adults who hitherto had their training in business and marketing now appreciate the increasing needs for them to hone their skills in the physical and biological disciplines. They must have a working knowledge in biology, chemistry and physics and other life sciences and scientific research development to participate and become effective business experts in the age of genomic science. The bioscience career paths will continue to enjoy a steady progressive growth not only in the developed nations but also in the progressive developing nations unimpeded by social-cultural forces.

Regarding the burgeoning drug industries derived from genomics, the consulting Resource Corporation's newsletter for biotechnology professionals recently echoed their observation "We expect the growing family of new genomics, proteomics, and bioinformatics technologies to dominate the national market...development in therapeutics by greatly improving the efficiency and speed of the entire drug discovery, testing, and approval process. We must bear in mind that currently, the most affluent and economically solvent company worldwide, is the pharmaceutical company." The impact of biotechnological role in wealth creation will continue to occur in the following fields:

Molecular Medicine, Improvement in diagnosis of disease, Detect genetic predispositions to disease, Create drugs based on molecular information, Use gene therapy and control systems as drugs, Design "custom drugs" based on individual genetic Profiles, Microbial Genomics, Rapidly detect and treat pathogens (disease-causing, microbes) in clinical practice, Develop new energy sources (biofuels), Monitor environments to detect pollutants, Protect citizenry from biological and chemical, Warfare, Clean up toxic waste safely and efficiently, Risk Assessment, Evaluate the health risks faced by individu-

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