



Intellectual property management and awareness at the university level in the biotechnology era: a Thai perspective

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Abstract

In the particular context of a developing country, the problems arising from a lack of awareness of intellectual property in universities in Thailand is described. These problems include a poor negotiating position in formulating licensing and like agreements, especially in relation to such agreements with developed countries. The situation in the biotechnology and pharmaceutical areas is highlighted, for example the formulation of pharmaceutical products with active ingredients related to those present in traditional medicines. Improvements at the universities proposed to address these issues embrace setting up intellectual property departments within each university and substantially increasing the level of intellectual property awareness in both under- and postgraduate courses. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Especially in developing countries such as Thailand, marketing technology and intellectual property protection (IPP) management need to be developed in parallel in the private sector and in non-profit research institutions such as universities to enable these organizations to maintain greater control of their intellectual properties. Biotechnology plays a key role in applications across many fields such as mining, agriculture, bioelectronics, and nanotechnology. By valuing and structuring their deals well, biotechnology companies and research institutions can earn higher returns and strengthen their partnerships with other companies [3]. Thailand, like many other tropical countries, has an inherent abundance of natural resources, such as medicinal plants and useful microorganisms. With the boom in biotechnology, a great deal of effort is focused on the discovery of potent chemical substances and fruitful protein encoding genes (i.e., new drugs and pharmaceutical products) from biological resources indigenous to developing na-

tions such as Thailand [1,2]. As such, the rapidly expanding biotechnology industry has generated intense commercial interest in the collection of biological material [1,2].

The speed at which research and collaborative projects are taking place in Thailand and other Asian countries has led to a gap between researchers' and academics' knowledge of intellectual property rights issues, and their capacity for involvement with foreign companies and institutions. Learning effective deal-making and intellectual property management can enable developing researchers to better develop skills to deal with these issues. Like other countries, Thailand does not want to lose its resources for little or no return, and certainly does not want to be a victim of biopiracy. Therefore, a thoughtful and methodical approach for intellectual property protection, management and negotiating deals is timelier than ever.

2. Rationale and background

Important to discuss in relation to the vulnerability to exploitation in Thailand is the ongoing lack of real linkage between the private sector and academic institutes to help technology transfer [4–6]. In Thailand, this lack of effective links between the private sector and universities has been exacerbated by the fact that most

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Thai universities have functioned as separate entities from the commercial world [7]. Previously, Thai tertiary institutions have rarely needed to deal with marketing university-developed technology, although technology transfer agreements have been in place at a few universities. Technology transfer is one of the means whereby the fundamental discoveries of biology are transferred into practical knowledge and useful products to benefit the human race [5].

Currently, the Thai university system is changing, and national universities are moving towards a semi-autonomous system. With these changes, universities will have increased ability to influence and direct future initiatives. This push of national universities towards semi-autonomous status (somewhat akin to privatization) will fundamentally change the nature of funding and support provided, resulting in a greater necessity for universities to manage and protect their IP just to be sustainable.

2.1. Background: cases in Thailand

Not surprisingly, Thailand has lost a fair amount of valuable and unrecognized local knowledge and indigenous microorganisms through poor IP management to outside projects from foreign-based funds and joint ventures. There are undoubtedly a large number of undiscovered or unreported cases, however, several major cases have been documented.

2.1.1. BIOTECH and NECTEC case

From 1993 to 1996, BIOTEC (a division in the National Science and Technology Development Agency, NSTDA) and the National Center for Genetic Engineering and Biotechnology (NECTEC) learned a painful lesson from its lack of awareness and expertise in regards to IPP [8]. With no written agreement, particularly no material transfer agreement (MTA) [9] and only a verbal agreement, BIOTEC transferred a number of microbial isolates – some 200 fungal strains, that were isolated around the Songkhla area – to an institution in the UK [8], in exchange for places on PhD degree courses. It is possible that those fungal strains of unidentified capacity may have potential for producing useful compounds worth much more than was actually received in return. This lesson illustrates the importance of being aware of partners and partnerships, especially with those institutions in economically more developed nations.

2.1.2. Plownoi

A well-known case is Plownoi [10], a native medicinal plant commonly found in Thailand. Thais have long used Plownoi for treating stomachaches. However, the

active constituent in Plownoi has been extracted and certain aspects have been patented by a Japanese company as a potential stomachache reliever. Many Thai medicinal plants have been investigated and used for medical purposes, such as the stem wood of *Dracaena loureiri*, a Thai folkloric medicine called ‘Chan-Daeng’ exhibiting estrogen agonist activity [11], and a new monoterpenoidal carboxamide, concinnamide isolated from the seeds of *Acacia concinna* DC. (Leguminosae) [12].

2.1.3. Jasmine rice

The jasmine rice case is another recent example in the biotech field [13]. An American company is marketing a genetically modified rice strain under the name Jasmati. Consumers may confuse this product with jasmine rice, exported from Thailand. Thailand could have considered claiming the name as a geographic trademark, but reacted too slowly. To the dismay of many Thais, the American company is moving to patent its product. Thailand’s rice exports in the first five months of 2000 decreased by 49% on those for the same period of 1999 to 2.79 million tons, and much of this decrease has been attributed by many Thais to the production and marketing of Jasmati. The value of the lost income is estimated to be about US \$910 million [14]. It is especially troubling given the level of poverty many Thai farmers face.

2.2. Background: Thai universities, external organizations and IPR

Whether or not national universities in Thailand are ready to stand on their own feet in the ‘autonomous system’ [7] is certainly debatable. Foreign academic institutions, overseas private sector companies, and various research institutes offer financial support and work in partnership with many faculty and staff at Thai universities in connection with various research projects. For these foreign organizations, access to resources such as microorganisms is often critical, and Thai researchers need to anticipate whether or not their discoveries are likely to become commercially viable at some point. Assuming they have potential, the focus must then shift to how to protect these intellectual property rights beforehand, and how the issue of protecting Thai institutions from IP disputes in the first place can be addressed.

These issues form the basis of the steps taken at Chiang Mai University, as described and explored in this paper. The necessity of understanding how to manage our intellectual property and how to deal and negotiate with fund generators whether domestic or foreign is of paramount importance to the biotechnology industry, and universities in Thailand.

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