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Fighting addiction: Viet Nam



GENERAL INFORMATION

- ◆ **Implementing institution**
 - ▶ Vietnamese Academy of Science and Technology (VAST)
- ◆ **Head**

Prof. Dr. Tran Van Sung (director)
- ◆ **Details of institution**

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- ◆ **Implementation period**

1996 to 2004 and ongoing

◆ **Costs**

Total: US\$2.9 million, including:

- contributions by various United Nations organizations: US\$960,000;
- extrabudgetary contributions to the United Nations Development Programme (UNDP) by Norway: US\$440,000;
- foreign government contributions: US\$450,000;
- individual foreign contributions: US\$550,000; and
- in-kind contributions by the Government of Viet Nam equivalent to US\$500,000.

SUMMARY

Heantos is an anti-drug medication and associated therapy originating in Vietnamese traditional medicine. Its development has been based on two phases:

- the development of a medicinal preparation derived from traditional knowledge and experience in coping with addiction to opium and opiate-based drugs; and
- the scientific development of this preparation in terms of proving its effectiveness and the development of a standardized product.

The development of Heantos from Vietnamese traditional medicine was initiated by Tran Khuong Dan in the 1980s. He was responsible for collecting more than 100 recipes based on published material on traditional Vietnamese and Chinese medicinal plants as well as the experiences and practices of several minority groups in Viet Nam that cope with drug addiction. Tran Khuong Dan

studied, blended and refined these recipes into what is now known as Heantos. His concoction proved to be safe and more efficacious than other traditionally used preparations and recipes.

During 1990 and 1991, Tran Khuong Dan's concoction underwent an official evaluation by the Ministry of Public Health in Viet Nam that confirmed its safety and efficacy but that did not result in its authorization and introduction into the public health system, primarily owing to the lack of standardization. The evaluation also recommended more clinical trials, which have resulted in the treatment of thousands of patients.

A more scientific approach to the development of this preparation was initiated in late 1995. Although these studies will not be completed until 2006, the project has already been marked by various successful stages:

- development and formulation of a scientific strategy and operational procedure;

- identification of independent, internationally renowned scientific institutes and the establishment of international scientific collaboration;
- chemical investigation of Heantos using modern research methods;
- substantiation of the safety and efficacy claims of Heantos in compliance with scientific standards;
- optimization of the original preparation and development into a standardized product;
- (limited) application of Heantos as an anti-drug treatment; and
- translation of the innovative experience into a case study/model for the scientific development of a traditional medicine.

BACKGROUND AND JUSTIFICATION

Viet Nam has a long history of dealing with opium addiction that has led to the development, particularly by minority groups throughout the country, of various traditional recipes.

The initiative of Tran Khuong Dan in the early 1980s to develop an anti-drug preparation on the basis of traditional knowledge resulted in a more systematic process compared to the conventional development of preparations of traditional medicine. However, his preparation of Heantos did not differ much from other traditional medicine products as it was still an inadequately standardized liquid.

Even so, it was subjected to an official evaluation under the Ministry of Public Health, which confirmed its safety and efficacy in clinical trials but also indicated its limitations. As a result, it was not officially introduced into the public health system. The concoction was made available, however, and was used to treat thousands of drug addicts over the following years — albeit outside the close control of clinical trials — generating anecdotal data of its efficacy.

The increasing problem of drug addiction in Viet Nam, allied to the evaluation of Heantos and its subsequent informal use, played a crucial role in the decision of the Vietnamese Academy of Science and Technology (VAST) to pursue the scientific development of the preparation.

Other considerations and justifications for the involvement of VAST were that:

- the potential of Heantos and its Vietnamese ownership needed to be protected;
- the project provided an opportunity to create the scientific conditions that would favour Vietnamese control of the further development of the product and its planned commercial production; and
- the United Nations Development Programme (UNDP) had favourably responded to the request for support for the initiative.

This final point offered the prospect not only of financial support but also

access to the independent expertise of the United Nations system, its support in networking with the international scientific community, and its impartial protection and observance of ethical principles, including the protection of intellectual property.

With further scientific development and verification, it is hoped that Heantos will eventually make a contribution to the global problem of drug addiction in offering a cost-effective treatment to drug addicts.

DESCRIPTION

In contrast to the conventional development of synthesized pharmaceutical products, the scientific development of Heantos did not generate a new product per se but a product based on a proven traditional medicine. Although the initial phase of the development of Heantos was based on traditional knowledge, the present case study focuses on the scientific development phase.

Among the studies carried out on the Heantos product were:

- botany — identification and description of the botanical characteristics of the different ingredients;
- pharmacognosy — identification of the compounds responsible for the therapeutic effects;
- phytochemistry — isolation of pure active compounds and the

elucidation of their structures; and

- pharmacology — evaluation of levels of toxic substances and the nature of acute and chronic toxicity of plant components.

These steps follow the scientifically established concept and process of drug development. The innovative nature of the project was the challenge to comply with high scientific standards under the limiting conditions of a developing country such as Viet Nam.

In terms of the scientific substantiation of the claims made for the safety of Heantos, toxicity tests and pharmacological investigations were performed in Viet Nam under the Ministry of Public Health. In addition, laboratory tests to determine the levels of undesirable residues — including heavy metals, microbes and aflatoxins, pesticides and other contaminants — were conducted by scientists at the Institute of Plant Biochemistry, Halle, Germany.

Clinical trials, conducted by the Ministry of Public Health, showed that treatment with Heantos provided a smooth and quick detoxification of opiate-addicted patients. The preparation also helped to alleviate drug craving while suppressing major withdrawal symptoms. No other side effects were recorded during the trials.

Apart from these official trials, since the beginning of the project, thousands of patients have been successfully treated “informally”. Although Heantos is used primarily to treat opiate dependence, for-

eign patients addicted to cocaine or synthetic drugs or who are dependent on methadone have been among those treated and many of them have not relapsed, even five years after treatment.

In summary, the results achieved to date — in both clinical trials and in the informal application of Heantos — explain and confirm the safety and efficacy of the treatment. These studies also proved that the composition of Heantos does not contain drug substitutes.

In terms of product development, the original liquid form of Heantos has been transformed into a powdered substance contained in capsules. This helps the product to meet the requirements of standardization, purity, uniformity and stability required for Heantos to be patented in Viet Nam and internationally.

In addition, most of the plant substances used to make Heantos are now cultivated under controlled and environmentally sustainable conditions, ensuring sufficient resources for the commercial production of Heantos.

In spite of these achievements, there is still a need for more scientific substantiation of the claims made for Heantos, its further optimization as a standardized product and its broader application in order to satisfy extensive and changing regulatory requirements.

More scientifically validated explanations for the efficacy of Heantos are also needed. These will, in part, be answered by the completion of ongoing investiga-

tions into the bioactivity of the product, but further studies on the interaction of the medication with brain receptors are planned. It is hoped that these studies will not only add to our knowledge of the mechanisms of drug addiction but also contribute to the broader recognition of the validity of traditional medicine.

In Western medicine, the conventional approach to treating drug-addicted patients depends on a slow process of managed withdrawal. In contrast, Heantos offers a potentially curative approach, providing a novel dimension for the treatment of drug addiction. However, these claims have yet to be validated in scientifically supported long-term therapy for the prevention of recidivism (or relapse) for which the Heantos medication could make a major contribution but not replace conventional therapy.

A number of special circumstances have been crucial to the development of Heantos and have contributed to the overall success of this initiative. These include the fact that Viet Nam:

- has a longstanding, documented knowledge of traditional medicine;
- has become open to the integration of traditional medicine into its public health system; and
- has relied heavily on its own efforts to promote and develop traditional medicine owing to its recent history of war and international isolation.

PATENTING AND COMMERCIALIZATION

A patent for Heantos, No. 2569, dated 4 February 2002, has been issued by the National Patent Office of Viet Nam, crediting the Institute of Chemistry (VAST) while recognizing the important contribution of its inventor, the traditional practitioner Tran Khuong Dan.

Once the scientific development of Heantos has been completed, international patent applications will be filed. In the meantime, it is not possible to divulge any information on specific scientific results or to provide details of which plant species are involved in the preparation.

PARTNERSHIPS

A major component of the project has been, and continues to be, an international collaboration between VAST in Viet Nam and the United Nations system, individual countries (including China, Denmark, Germany, Norway, Switzerland and the United States) and the international scientific community.

With regard to the United Nations system, this cooperation started with UNDP and the United Nations Office for Project Services (UNOPS). Later, encouraged by the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Science Conference in 1999, which emphasized the need for the scientific development of traditional

knowledge, UNESCO became involved and took the lead in an inter-agency arrangement. This cooperation was exercised mainly with UNOPS, involving the UNESCO Department for Natural Sciences and the Jakarta Regional Office of UNESCO, although no formal arrangement was ever reached.

Guidance and other contributions were also obtained from the United Nations Drug Control Programme (UNDCP), the World Health Organization (WHO) and the World Intellectual Property Organization (WIPO).

Cooperation with these United Nations bodies has been instrumental and politically decisive for the scientific development of Heantos. The collaboration has provided legitimacy, expertise and managerial support to the project. It has also facilitated cooperation with individual United Nations Member States and the international scientific community. In particular, support from the Government of Germany and the government of the State of Northrhine-Westphalia in Germany has facilitated cooperation with German scientific institutes. German scientists continue to assist the development of Heantos in a significant way. Notable among these collaborators are the Institute of Plant Biochemistry in Halle, which has investigated the bioactivity of Heantos, and the University of Essen, which is conducting a clinical trial with Heantos on the basis of the regulatory requirements of the European Union. In addition, prepara-

tions are under way to launch a collaboration with the Centre for Interdisciplinary Addiction Research of the University of Hamburg, Germany.

Apart from these formal collaborations, the Center for Chemical Dependence of The Johns Hopkins University School of Medicine and the Integrative Medical Services of the Advanced Integrative Medical Institute, Washington, D.C., have made important contributions to the project. Recently, a collaboration with the World Innovation Foundation, United Kingdom, has been initiated to promote the use of Heantos in the United Kingdom.

REPLICABILITY

The project has been successful in validating the claims of a traditional medicine and developing a product, Heantos, which has now been patented in Viet Nam. Applications for international patents will be applied for in due course.

In achieving these goals, the project has contributed to the recognition of traditional medicine and provides a model — involving the international community and international scientific collaboration — for other developing countries by demonstrating the validity and feasibility of such an initiative. Similar projects could ultimately create conducive conditions for developing countries to integrate traditional medicine into their public health systems as

well as for the international scientific community to develop new medications based on the knowledge of practitioners of traditional medicine.

LESSONS LEARNED

Scientific institutes and individual scientists involved in the project had to translate their experiences in basic science into an applied science aimed predominantly at product development.

Efforts also had to be made — and new modalities of interaction developed — to bridge the gap between the practitioners of modern science and traditional medicine.

Such political and sociological obstacles were a concern throughout the implementation of the project. In fact, it appears that some of these obstacles are inherently related to the widespread reservations encountered by traditional medicine and its practitioners not only in Western countries but also in the public domain of developing countries and the international scientific community. As a result of these reservations, claims made by traditional medicine are often dismissed, judging them on the basis of scientific standards applied to medicinal products in Western countries.

These reservations are even more manifest with regard to traditional medicine products that claim to cure diseases for which Western science and medicine have failed to develop a cure.

As products of traditional medicine are derived from natural substances, they also encounter obstacles when authorization for public use is being sought, particularly in Western countries where the regulatory approach is not designed for plant-derived products. This also applies to some extent to the regulation of national and international protection of intellectual property, though it is possible to patent natural substances that have been scientifically developed and tested as drugs. However, both processes are costly and lengthy and normally exceed the financial possibilities of their inventors or scientific promoters in developing countries.

Other obstacles encountered during the Heantos project related to the cooperation between the Government of Viet Nam and the United Nations, particularly with regard to misinterpretations of the project's product orientation, commercial potential and closeness to the private sector, which delayed the implementation of the project. Basically, international donors are often unwilling to fund near-market research. Without such a product-orientated approach, however, it is difficult to develop a traditional medicine based on scientific principles.

IMPACT

Drug addicts the world over will be the primary beneficiaries of a cost-effective treatment with Heantos, for which this

project establishes the necessary scientific conditions.

Indirectly, national societies will gain social stability and their economies and governments will benefit from significant savings through the introduction of such a cost-effective treatment. There is no question that this will result in a dramatic reduction of direct and indirect costs related to the problem of drug abuse.

Furthermore, the project will contribute to the recognition of traditional medicine. This will facilitate its integration into the public health delivery system of developing countries and respond more effectively to the needs of large sections of their populations that currently have little or no access to Western medicine.

The success of the project will also highlight the potential of traditional medicine to resolve diseases for which, to date, Western science and medicine have failed to provide a cure.

The project may also provide Western countries with a rationale for regulating herbal medicinal preparations within their public health systems in a way that protects the public against incurring health risks. At the same time, scientists in developing countries are not discouraged from developing herbal medicinal preparations for the international market.

Finally, the project will contribute to the enhancement of the institutional and scientific capacity for the development of traditional herbal medicine in Viet Nam.

It will create conditions that need to be in place for the future industrial and commercial development of Heantos and other medicinal products. The beneficiaries of such an enhanced institutional and scientific capacity will be the Vietnamese population as the result of various spin-off effects. There will be wider benefits, if the project succeeds in setting up a model and if the scientific methods and experiences evolving from project implementation can be applied in other developing countries.

FUTURE PLANS

If the promising indications for the claims of Heantos as a potentially safe and efficacious anti-drug medication can be scientifically substantiated and explained during the envisaged three-year main phase of this project, there are likely to be no obstacles to hinder the further development of Heantos as a commercial product under terms that are beneficial for Viet Nam.

In order to get to this stage of the product development process, the following steps will be followed:

- scientific substantiation of the long-term efficacy of Heantos;
- development of short- and long-term Heantos therapies that take into consideration the diversity of socio-cultural and socio-economic factors of its international application;

- scientific explanation of the bioactivity of Heantos and its mechanism when interacting with brain receptors;
- creation of the necessary scientific and technological conditions for the production of Heantos in Viet Nam and its distribution in accordance with standards of good manufacturing practice and good distribution practices;
- establishment of the necessary scientific and clinical conditions to exercise quality control in accordance with international standards;
- application for an international patent; and
- introduction of favourable conditions for public/private partnership, consistent with the objectives of the project and its principles of international cooperation, to facilitate the transition from a primary scientific project to a commercial activity.

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