# Transforming Waste to Value: Human Placenta in Thailand

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**Abstract**
Human placenta has long been used in many countries such as Japan and India; but in Thailand it has not been made advantageous. In addition, hospitals spend budget on disposal of human placenta. An attitude survey of pregnant women and related persons is the first step to developing the process of transforming waste to value. The study is concerned with quantitative and qualitative approach. The result shows that 33 percent of the pregnant women agree with making use of human placenta while 44 percent show uncertainty towards it as they have no idea about what industry makes applicable of placenta. Most of the sampling group have a positive attitude towards the case that human placenta can be turned into medical value. For the doctors opinion divided into 2 groups, positive and negative; group of positive opinion towards the application of placenta if its process and production are of clear standard. The study shows that information plays an important part to develop knowledge about placenta. The information provided to the society must be able to clarify on the issues about acquisition and usage process. The study is a good sign of the beginning of the process to transforming waste to value.

**Keywords**
Human Placenta, Waste, Value, Transformation, Thailand.

## I. Introduction

Today, biotechnology has an affect on many industries as well as an impact on the global economy as its knowledge is the propulsion for other various sciences; for instance, medical, pharmaceutical and agricultural sciences. Besides, the world's situation with different kinds of problem should be well eased by biotechnology, namely the problems of food conditions and agricultural products. The tendency of the future technology is to bring out the knowledge of biotechnology to drive other sciences, to develop researches and to produce innovations. An example of innovation which is now a social issue even widely accepted, is concerned with stem cells. The recognition of regenerative medicine is thus a technology of the near future, which has a value in business [1]. Consequently, the search for new materials as a supply for research and development systems to improve innovations is an important process to build opportunities in business. As we can see, many businesses are now looking for materials with quality to develop their researches in a row.

## II. Human Placenta

Human placenta had often been used in the past in folk remedies in Asian countries. In 1959 the therapeutic components were successfully extracted from human placenta in Japan and given the commercial name Laennec in Japan and were approved as a therapeutic agent for cirrhosis of the liver. In Korea human placenta extract from Japan has been approved for improvement of liver function since the importation of Laennec from Japan in 2003 [2]. Human placenta is a viable source of many useful products; cosmetics, pharmaceuticals, blood products and hormone [3]. Thailand's doctor have been taking advantage of the human placenta in a research and treat the patients, it has also been used in eye surgery such as repairing persistent epithelial defect [4]. Moreover, Umbilical cord blood can be used to research stem cell, but it is used only for research purposes more than business. In Thailand human placenta as bio-medical waste; wastes from hospitals and clinics which have a pathogenic, chemical, explosive, or radioactive nature are called Bio medical wastes. The results of cost analysis of waste disposal of treated and non-treated infectious waste in King Chulalongkorn Memorial Hospital in Thailand had average total cost 25 Baht/kg [4]. In Thailand, it is estimated that over 500 tons of placentas are disposal annually [5]. The bio waste companies have been conceded by the hospitals the disposal of medical wastes [6]. Hospitals lose of budget for bio waste disposal but human placenta is a source of many useful products, this mean that human placenta have values. It should not invest to get rid of this garbage. Transforming is the process to make a benefit for both hospital and mother. Not only the win-win situation for them but also the process changes the garbage to be a value product in Biological Industries. Meanwhile it has been a benefit for many sectors. In Thailand, Human placenta in management approach was published less than medicine approach. So explore the attitude of pregnant women and doctors with the useful of human placenta are a first steps for change waste to value. Consequently, the study will provide understanding of develop value chain of human placenta in Thailand.

## III. Research Methodology

This research of studied used quantitative and qualitative approach. Quantitative approach used exploratory research. Sampling was 120 pregnancies; 30 pregnancies per region; from four regions as North, North-Eastern, South and Bangkok (BKK) and questionnaire as a tool to collected data. The questions were: personal information; age, education income; perception and attitude about human placenta. Qualitative approach, Informal conversational interview technique used for doctors and pregnant women.

## IV. Results

The study result was received from the sampling group of 120 pregnant women, with the cooperation in answering the questionnaire from 118 of them. These pregnant women were from 4 regions of Thailand: that is 29.7% from the Northeast, 23.7% from Bangkok, and 22.9% from both the North and the South. Among all pregnant women, 50% have the idea that human placenta can be made useful, but it is also found that only the sampling group in Bangkok represents the larger proportion of pregnant women with such idea than other groups. 44% of the entire sampling group knows that human placenta is used in the medical area, and 16.1% know that it is also used in the beauty industry as well as for cosmetics.

At the opinion level, 33% of the sampling group express their agreement if human placenta can be made advantageous while 44% show uncertainty in that respect because they have no idea of what areas human placenta can be used in. Moreover, the uncertain group also adds that they will go along with the medical application of human placenta rather than its disposal by hospitals. The researcher, however, finds that the sampling group from the South of Thailand disagrees on the application of human placenta as it is involved with religious issues. As for the positive attitude, we find that 69% agree on the use of placenta if it signifies a medical value for the benefit of their delivery. For the result of the informal interview with 5 pregnant women in terms of ethical aspect, all of them agree with the application of human placenta as it is counted as advantage instead of waste to be disposed. Most of the pregnant women also express an additional opinion that they would feel very good knowing that their placenta could be useful in treating patients, but this process needed to be clarified by the hospital. In the case of using human placenta to create new products, they state that they should be the ones to gain some advantage as the placenta comes from their bodies. For the opinion of the doctors, there are 2 groups. The first has a positive opinion towards the application of placenta if the standard of its process and production is clear; and the second has a negative attitude as they think of possible disease transmission despite such standard.

## V. Discussion

The 2 categories of our sampling groups generally agree with the use of human placenta rather than its disposal, besides they have a positive attitude towards any case of valuable use of placenta: be it used by the government researchers in the study for medical purposes, or by the private sector in any other profitable purposes. It is nevertheless certain that the result of this research can provoke a train of disagreement or resistance in the case that a pregnant woman will donate her placenta to a university or hospital for the academic purpose. We should all know that the term "value" has two sides: tangible and intangible. The tangible value can be money, gifts or favors, while the intangible value is that on the basis of perception [7]. The value of perception is the result found in the case of placenta donation for medical or academic purposes, which is in line with the opinion of the sampling groups. Innovation can arise from any sources such as research efforts of universities, government laboratories. Singapore, Universities is one the source of innovation in Biotech sector [8]. New Product develop, external knowledge is often accessed through a formal technology supply chain comprised of technology source firm, the knowledge supplier, and technology recipient firm, they conducting new product develop effort [9]. For the case where the placenta is developed to an innovation and therefore has a marketing value, the initial supplier deserves a tangible value in this manner.

## VI. Conclusion

Many countries have, up to today, made use of human placenta, especially those countries in Asia except Thailand where human placenta only occupies the status of a contaminated waste which the hospital needs to dispose rather than to use in any other useful aspects. Nowadays, the Thai society acknowledges the advantage of human placenta better, and so do pregnant women who also have a positive thought when knowing that their placenta can create value. Equally, the group of doctors thinks of the use of human placenta in a positive way only with an appropriate standard of the acquisition, extraction and usage processes. At all events, the information provided to the society can change the status of placenta as a waste into certain value in both medical and industrial areas. The study result reflects that pregnant women believe that their placenta must have a value in any case, but the word "value" according to them must be both tangible and intangible. The intangible value is certainly the value of recognition, which should be started by communicating necessary information to the society, for example when the hospital makes advantage of human placenta in any case, they should let the society know about it, not only the small group within the hospital. This kind of communication will create perception towards value as the information will also be developed into knowledge to people in the society. The acquisition process have clarity of source, traceable and standard of process. The way to acquire the human placenta must followed by principle of human right [10]. In the matter of using human placenta, the society must know the outcome or what happens in each chain; for instance, the society must know how many patients are benefited from the advantage of human placenta, what diseases can be cure with it, what industries are making use of it, and what products are from it. These are, after all, the essential information for the transforming process.

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