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Secure/Safe, Healthy, Intact and Halal of Mangosteen Small Medium Enterprise

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Abstract— IbM of Mangosteen UKM group is one of Agricultural Polytechnic State of Payakumbuh's proposal program which has aim to increase the productivity value and competitiveness also to dig up the mangosteen local food potency in line with functional food paradigm development. Prebiotic and probiotic mangosteen food technology as the food quality for life safety is one of future plan effort to dig up local food potency that is Safe, Healthy, Intact and Halal (Allowed in Islamic way). By this IbM program is expected to change people's mindset so they have willingness, be able and can to process the mangosteen to be product which about to add economical value and various functional food using technology in processing. Mangosteen (*Garcinia mangostana* L.) aka Queen of tropical fruit is a fruit that has many superiorities compared to another fruits like natural colour source that can be used as food coloring, also to be utilized as anti-oxidant, anti-diarrhea, anti-cancer and others. The Methods done are field survey, Focus Group Discussion (FGD), Demonstration, illumination, training that focused to the products and methods with guidance system also effective monitoring in creating functional food products and always to be preferred. In its implementation Mitra's group in society contributing as the business doer in IbM activity. College has role giving innovation and technology transfer and evaluation and guidance to 'Mitra'. The result expected is prebiotic and probiotic mangosteen food products like mangosteen yogurt, Mangosteen syrup, Mangosteen-dried extract and mangosteen cake, service, journal, and book.

Keywords— Functional Food, Prebiotic, Probiotic, Mangosteen.

I. INTRODUCTION

Various dishes of Minangkabau society which mostly content of coconut milks and meats make their saturate fat meals become higher than another tribes in Indonesia. This case delivers Minang people at the condition of hyperlipidemia prevalence and heart disease at the high level. Heart disease is often considered as old people's disease, but also can not to be just ignored by young people. Truly, many things can be done to slow down and even to prevent coronary heart disease by healthy life style. One of it through eating pattern. Eating pattern becomes one of prior key to keep the cholesterol level in order the heart stays healthy. One of it by consuming functional foods.

People's awareness of chemistry medicines dangers make many people move to natural foods or herbal medicines like jamu (herbal drinks). Fresh Fruit juices and another simplicia to overcome hypertension and cholesterol cases. A long with that, house industries are improving which offering healthy foods products. But they are still not clinically tested and hard to compete in the market business so that not so well improved. To pay attention of local wisdom,

functional foods development can run by mangosteens processing development, considering the mangosteen is in great quantities in Limapuluh Kota regency especially in Harau subdistrict. The mangosteen (*Garcinia mangostana* L.) aka the queen of fruits has many advantages compared to another fruits. Skin parts of this fruit can be used as food dye, antioxidant, antidiarrhea and anticancer. One of flavonoid compound contained is antocianin which better than Vitamin A, C and E. Antocianin capable to avoid LDL oxidation, LDL oxidation will produce free radical the cause of aging and another degenerative diseases. Antocianin works to block atherogenesis process by oxidating bad fat in the body, that is LDL (Low Density Lipoprotein) [1],[2].

Antocianin is also protecting endothelial cell integrity that covering the artery wall, so the damage will be not occurred. Beside that antocianin also to relaxation the artery to avoid atherosclerosis and another cardiovascular diseases [3].

Mangosteens harvested in Limapuluhkota regency is around 4.263 ton with 1.132 Ha of field wide. Mangosteens are usually exported to Thailand, this because no technology to be developed in the society at the time after harvesting. Set out from the problem above offered mangosteen prebiotic and probiotic food processing technology which

research result of (Rince Alfia Fadri, 2011) that had ever promoted [4].

Prebiotic and probiotic mangosteen products from health factors have some superiorities : 1) easily absorbed, this because protein degradation to be simpler protein (amino acids formed) directly absorbed and utilized as its function. 2) Consumable by public whom anti-lactose (ordinary milk), generally happened to adult and children that unusually to consume cow milk. 3) Taste better and preferred by children and adult.

IbM Activities by processing of food technology prebiotic and probiotic mangosteen, the innovation result of Rince Alfia Fadri (2011) like dried mangosteen skin extract given at the dosage 10g/day has the impact of reduction to cholesterol total level and to keep blood sugar level and to improve TBC medical patient also anti-obesity medicine. Besides process improvement innovation and production increase, this activity expected gives product add value and also to upgrade mitra's product competitiveness, mitra's income, to fulfil consumers/market demand to health food, to promote and to increase mangosteen potentia as functional local food [5].

The purpose is to facilitate commercialization process of innovative functional food products so the production is increasing, have added value, good quality and to compete in the market. Mangosteen functional food is processed in many kinds of food processed products and drinks like yogurt, syrup, ice cream, dried mangosteen powder steeping, and cake flavored by various ages group.

Mangosteen-based health drinks and foods in the market so far have been considered are still quite expensive and not popularize. The presence of mangosteen-based functional food can provide solution to the needs of health foods and drinks for patients with degenerative diseases or for public who want to be healthy. Special purpose of this IbM program include the production process improvement, business development, packaging improvement and marketing plans arrangement and monitoring and evaluation at every mangosteen-based processing training.

II. MATERIAL AND METHODS

A. Place and Time

Agricultural Polytechnic State of Payakumbuh's IbM (Science and technology for community) activity done in Kenagarian Taram, Harau Subdistrict, Limapuluh Kota Regency on April-December 2014.

B. Materials and Tools

Materials used are fresh food like mangosteen, keebeling (*Strobilanthes crispus*), cat's whiskers, ginger, flour, milks, fruits and another foodstuffs. The tools used are foodstuff list composition, some cooking tools like oven, wok, steamer, stirring spoon, sieve, blender, mixer, ampia, spoon, plate, bowl and some tools at microbiology laboratory and chemistry laboratory of Agricultural Polytechnic State of Payakumbuh.

C. Implementation Ways

IbM activities done by training through several steps :

1) *Speeching Methode and Discussing*, Speeching metode and discussing done to explain to mitra many things about science and technology that will be implemented, among others, production process improvement, mangosteen-based functional drink business development, Business management improvement by forming organization structure and business licence obtaining.

2) *Way Demonstration*, Way Demonstration Methode done aiming to show mangosteen processing process as functional food and health drink. Demonstration started from the way in selecting raw materials, materials preparation, formulation, product producing until the product packaging.

3) *Result Demonstration*, It is to prove to the public the advantages of Science and technology given to the quality improvement and mitra's income increasing and all at once as comparison between the old metode (Mitra's own) with the new one of science and technology implementation result from IbM programs.

4) *Monitoring and Evaluation at every mangosteen based processing training*.

5) *Cooperation in the form of nutritional consultation services*.

6) *Market opportunities Analysis of mangosteen functional food products*.

III. RESULT AND DISCUSSION

A. Result

Socialization result by speeching metode and discussing also demonstrating give a prove technology adoption to the public through :

1) *Production Process Improvement*

UKM Production Process Improvement is more focused to the processing ways including raw materials sanitation, processing ways and final result. The expectation of IbM program can to improve entirely processing systematic started from material improvement until the distributing run well. The creating of mangosteen powder health drink business and mangosteen powder functional drink with several mixture for consumers health which impact to Mitra family by increasing family economy and social status.

Mitra Mangosteen UKM business existance impacting to the area where food and functional drinks produced which ultimately impact on public health. On the other side, UKM Mitra business can to encourage other farmer group to carry out development in the form of health, halal and secure products and the marketing ways is expanded that have impact to the employment.

The opening of insight for all UKM Mitra Members and local communities to entrepreneurship. The producing of mangosteen skin grinder. The producing of drink products and functional food or other health drinks like mangosteen ice cream, mangosteen yogurt, nata de mangosteen which secure, health, intact and halal.

Mitra also studied about nata de coco processing process, nata de mangosteen, yogurt and mangosteen ice cream by paying attention to food safety. By production process improvement, the taste, appearance and quality mangosteen processed product consistency can be arising. Production process improvement done to produce smoother mangosteen powder and tasty salutary drink products.

2) Business Development

Efforts in business development is increasing the consumers amount in ordering mangosteen powder functional drinks and another products. The development of mangosteen powder health drinks can to fulfil consumers need to functional drink products.

3) Packaging improvement

To keep and to increase products quality, packaging improvement is necessary to do. Packaging in addition serves to maintain the products quality, it should as selling promotion. Packaging is also equipped with a label and interesting design by putting P-IRT licence and Healthy Departement. On the label will also written product nutrient values composition and statute based.

4) Marketing Planning Arranging

Strategic planning for marketing at Ibm program is a managerial process in the group of UKM to produce and to keep suitability between target and resources at the group with market opportunities arising. The aim strategic planning in marketing secure, healthy, intact and halal mangosteen-based functional food products expected to produce profits and good long-term growth for group members or local communities.

Errors in creating marketing strategies can threaten the survival of Mitra mangosteen UKM. The other way, a good strategic planning can help to protect UKM resources to competition insistence. If seen from the technology sector is still visible human resource skills deficiency to use the existing technology. Beside to understand about social-economy factor impact to mangosteen products, market, and the ways of marketing so the chief and UKM Members as well as being forced to understand the changing influence of technology factor at operation activities and ability to create innovative and variation new products. For this case Mitra Mangosteen UKM needs a coaching and regular mentoring.

5) Monitoring and Evaluation at every mangosteen-based processing training

Monitoring is a routine process of data collection and progress measurement for Ibm Program objective. It is done at every training given that involving quality observation from mangosteen-based functional food product and Mitra's UKM services to consumers. Evaluation of Ibm program is methode using in investigating program effectivity to create secure, healthy, intact and halal mangosteen functional food. Ibm team assessed the program contribution to Mitra's mangosteen UKM change and improvement needs, continuance and business development as the direct effect of the activities.

6) Cooperation in the form of nutritional consultation services

The all results of Ibm activities Mangosteen UKM Kenagarian Taram followed up with cooperation in the form nutritional consulting services. The chief is directly acting as nutritionist. To remember mangosteen-based products that can be classified as functional food product with herb category, so the nutritionist from this program also asks for suggestion and consult with general doctor and specialist one.

7) Market Opportunity Analysis of Mangosteen product

The marketing of mangosteen functional food needs a serious and a certainty to through optimal market level. For that, needed a good strategy. Market opportunity for mangosteen products must have trick because now the public still have the concept if herbal medicines like functional foods are quite expensive and unreachable for daily buying.

B. Discussions

National milk consumption in the year 2008 reached 1.246 million ton and increased 31% or 895,9 ton in the year 2010. The increasing of national milk consumption does not mean that Indonesia is self-sufficienced milk. From that amount, 1/3 of it is imported milk. This fact, in production sector or milk production processing more over as long as this economy crisis the price of imported milk being more expensive [6].

Milk processing has important role because fresh milk is a vulnerability foodstuff (perishable food), so by processing process, the milk's storability becomes longer. Beside that milk processed products can produced a yogurt. Milk processing profit to be a yogurt is increasing nutrient content. Generally, yogurt's nutrient content relatively higher compared to fresh milk as the raw material to make yogurt, because yogurt has higher density. Yogurt is also used to solve lactose intolerance sufferer [6]. The alternative except the yogurt, lactose intolerance sufferer can to consume a kind of soy milk made from soybean seeds. This drink is very familiar and has high nutrient. Yogurt or soy milk can be produced in high scale industry or small industry (home industry).

Mangosteen yogurt processing making is also determined by incubation temperature and pH. Beside that raw materials quality will also determine the yogurt's quality. Another trouble in yogurt processing industry is the consumers, this product is only limited to a certain circle who knew and recognized the advantages of this product and high physiological tolerance to the yogurt because of its specific sour taste.

Standardization (formulation) in processing of yogurt is a stage to manage of composition chemical milk that will use to produce specific taste and property of yogurt and also appropriate processing ways. Basic formulation used is a research result of Rince Alfia Fadri (2010), Politani's Ibm team [5].

1) Evaluation and Analysis of SWOT

Evaluation, that is Mitra report about production management, marketing and financial at the Mitra business. Discussion results give description appropriate with SWOT analysis about Mitra Industry that is involved with

mangosteen skin powder processing and another mangosteen-based processed products.

SWOT is a type of analysis by seeing strength, weakness, opportunity and threat one business. The SWOT result analysis :

- Strength processing industry of "Mitra" mangosteen "UKM"
 - a. This business is small case done so the capital used relatively lower and so its loss risk and the business stability is more guaranteed.
 - b. Management is not bureaucratic and independent and it is family business so all decision procedures can quickly done, no discussion in purchasing the raw materials, labor appointment and others.
 - c. No cooperation with another parties so this business will be more flexible in production capacity or product sell price.
 - d. Quality and Specific product's taste
 - e. Using e-business to produce products
- Weakness processing industry of "Mitra" Mangosteen UKM :
 - a. No written planning, this causes yogurt processing industry and soy milk can not to centralize all the power and energy to achieve the most profitable target and no clearly business development program. Business wisdom is not based on the exist situation and condition, this business is really hard to be evaluated because its management especially finance management is not well organized.
 - b. No future/development oriented, Business orientation is just still limited to the current profit and the business can run.
 - c. No regular bookkeeping, this condition causes the business can not to be evaluated its expediency and no business development program.
 - d. Total production amount is uncertain, this causes labor using and capital is not optimal so the income got is uncertain.
 - e. "Family sentries", this unwell structured business causes management system can not run well especially in case of finance management and labor.
 - f. The price of raw materials inclines to fluctuate
- The industry opportunities of mangosteen powder processing and another mangosteen functional drinks :
 - a. Market growth is possible increasing.
 - b. Market opportunity to get promising consumers.
 - c. No competitor for mangosteen skin business in Limapuluh Kota Regency and Payakumbuh City.
 - d. Openness to use new technology in the future to make a great progress in the production sector.
 - e. Business opportunity of mangosteen yogurt processing is large enough because it is still relatively rare

The industry threats of mangosteen powder functional drink processing and another processed products are uncertainty price, raw materials quality and uncertainty quality products produced. The uncertainty quality and raw materials cause fluctuation of production costs and the

difficulty to determine a decent price so it is difficult to predict a profit. The uncertainty of products quality cause these products can not to compete with factory scale products and marketing network is relatively very limited. This have been fixed by evaluating the ways of processing periodically.

Health drinks more over mangosteen-based so far to be assessed by public are still quite expensive and yet socialized. Hopefully, by the products of prebiotic and probiotic mangosteen will give solution to the needs of health food for people with the disease as well as for people who want to be healthy.

Prebiotic and probiotic mangosteen products from health factors have some superiorities : 1) easily absorbed, this because protein degradation to be simpler protein (amino acids formed) directly absorbed and utilized as its function, 2) Consumable by public whom anti-lactose (ordinary milk), generally happened to adult and children that unusually to consume cow milk. 3) Taste better and preferred by children and adult.

In this IBM activities will be given the innovation of prebiotic food technology and probiotic of mangosteen dadih (Prebiotic and Probiotic Mangosteen) innovation result of Rince Alfia Fadri (2011) for example dried mangosteen skin extract that given with dosage 10 g/day will give decrease effect to the cholesterol total level and to keep blood sugar level and to improve TBC medical patient, also used for anti-obesity medicine. In addition to the improvement of TBC medical patient and production increasing, these activities also expected giving plus value to the products and to increase the competitiveness of Mitra's products, to increase Mitra's income, to fulfil consumers demand of health foods, to promote and to increase dadih potentiation and mangosteen as functional local foods.

The new consumers of Mangosteen UKM(Public Activities Unit) will be given informations and told that nutrient is one of health important factor for somebody, it is started at the growth period until at the age and even at the sick time, nutrient calculation is very needful in supporting healing process. There are some cases just like diabetes, high blood pressure, kidney failure, heart disease, digestive tract problems, uric acid, cholesterol, triglycerides in the blood, etc are proven to be managed by setting good nutrient beside taking medicines and mangosteen skin giving as an effective functional drink.

IV. CONCLUSIONS

This IBM programs have been giving direct effect to the entrepreneur by created household production in drinks and foods mangosteen based sector which served consumers needs about health foods and drinks.

This programs have been giving positive effect to the entire public, especially to whom started to love and to care about health and to change the mind set with functional food paradigm and back to nature.

It is necessary sectoral across cooperation just like government local clinic (puskesmas), drugstore and hospital in developing mangosteen powder drink business by admixture or no of another health drink, to remember permanent consumers expected in line with specialist doctor advices and hospital recommendations.

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