

# Training of the safe and environment-friendly production house at koro benguk tempeh industry in Mertelu Village, Gedangsari District, Gunung Kidul

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## ABSTRACT

Food is a basic need for humans need to live and support health. However, foods are needed to be processed safely, so it can fulfill nutritional needs and also maintain human health. Unsafe food processing can endanger humans because of the increased risk of foodborne disease. In Mertelu, Gedangsari, Gunung Kidul there is a small and medium enterprises (SMEs) that produces koro benguk tempeh. Unfortunately, the application of safe production houses and good processing methods have not been fully implemented in this industry. Thus, this program focused on increasing safe production house training which is one of the requirements for obtaining P-IRT certification. The activity was carried out for two days, 6th and 12th February 2020 with activities such as counseling, training, and mentoring in production houses. This activity was attended by Mertelu's community who was involved in koro benguk tempeh production. After these programs, they was able to increase understanding of the safe management of production houses. However, some physical facilities were still inadequate to fulfill the standard because the resources limitation. Therefore, they are need further programs to improve existing infrastructure to meet the criteria for a safe food production house as a requirement of Household Food Food Industry (P-IRT) certification.



## KEYWORDS

Good food processing methods  
Safety production house  
Koro benguk tempeh



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## 1. Introduction

Food is a source of energy for humans to do activities and also to maintain their survival. However, food that is not well processed can be a source of disease and harm to humans or known as foodborne disease [1]. The impact of mild foodborne diseases is dizziness meanwhile severe foodborne disease is death [2]. The impact of foodborne illness is very large on socio-economic conditions in society because it causes losses such as decreased productivity of a person due to conditions of being unable to work due to illness or death [3]. Therefore, in the food industry, it is necessary to have regulations that are able to guarantee good food management so that the food produced from a food industry will be guaranteed safe and consumers are protected from foodborne diseases, both large and small industries.

Mertelu Village is one of the production centers of koro benguk tempeh products. Although this Koro Benguk tempeh industry has been running for a long time and has become a source of livelihood for its citizens, it is still not quite popular among the wider community such as urban areas compared to soybean tempeh. Koro benguk tempeh is generally sold in raw condition. However, there are areas that have processed it into other products, such as besengek tempeh from Wates Kulonprogo. This typical tempeh of the Special Region of Yogyakarta has lower organoleptic characteristics than ordinary soybean tempeh. This tempeh is black and not soft so it is not liked by many people so there needs to

be special treatment to improve the organoleptic quality [4], [5]. In fact, when viewed from its usefulness to the health aspect, it is quite high because it contains isoflavone antioxidants and has an effect on lowering blood sugar levels so that it has the potential as an antidiabetic drug [6], [7].

The food industry in the community is generally small in scale and has not been well standardized. The same was found in Mertelu Village, Gedangsari District, Gunungkidul Regency. The village has a koro benguk tempeh industry that has been running for decades. This industry is still a household scale and is carried out by several community groups. The condition of the production house which is still simple is still maintained even though when viewed from the aspect of food safety it is still insufficient. If this product wants to compete in a wider market, it is necessary to arrange for a distribution permit in the form of a Household Food Industry Licensed (P-IRT). The management of P-IRT in the home industry needs to have a Home Industry Food Production Certificate (SPP-IRT) issued by the Regent/Mayor and the Head of the National Food and Drug Agency [7]. Before obtaining the SPP-IRT, the food industry will be given counseling on Good Food Production Methods for Home Industry (CPPB-IRT) so that it can be applied to achieve the certificate.

Koro benguk tempeh industry in Mertelu Village still has not received information about its business license in the form of P-IRT so that sales are limited to traditional markets. If we look at the benefits of koro benguk tempeh based on the research, it was shown that koro benguk tempeh has anti-glycemic effect and contain high antioxidants. Thus, it is very potential to be developed into functional food to support the health of the human body. Therefore, we will provide socialization and assistance to the community to be able to fulfill one of the aspects required to obtain SPP-IRT.

Small and medium enterprises (SMEs) of koro benguk tempeh was needed to be given information related to the application of safe production houses in addition to obtaining certificates of business legalization [8], [9]. By improving the production house and the production process, SMEs can increase their product quality and process for P-IRT license [10]. The certification not only can increase the economic value of product, but also expanding the market of the product and make the product more known and well utilized in the community as well. Therefore, the benefits of koro benguk tempeh can be optimized to maintain people's health.

## 2. Method

The methods implemented in this activity are counseling, training, and mentoring. This activity was carried out in Mertelu Village, Gedangsari District, Gunung Kidul, Yogyakarta. The targets for these three activities were all residents who produce food independently, both commercially and non-commercially. The number of Mertelu participants was 20 people. The tools used in this activity were LCD projectors, photocopies of materials, and trained facilitators from students to carry out the training and mentoring process.

Socialization activities for the application of safe production houses based on the regulation of the Head of the Food and Drug Supervisory Agency of the Republic of Indonesia Number HK.03.1.23.04.12.2206 Year 2012 about Good Food Production Methods for Home Industry [7]. The details of the activities in this program were counseling, training, and mentoring which were carried out for two days. The counseling activities were carried out using lecture, discussion, question, and answer methods with a duration of 1x100 minutes. Then, participants were given training with a duration of 2 x 200 minutes related to the material given during the previous counseling. In the final stage, several residents will be assisted in their respective production houses regarding the application of safe production houses. Counseling activities in the three villages were held on February 6, 2020. The training and mentoring activities were carried out on February 12, 2020.

### 3. Results and Discussion

The socialization activities were carried out in 2 days. On the first day, counseling was conducted using lecture and question-answer methods. The extension activities are shown in Fig 1. The participants of this socialization activity are the koro benguk tempeh business owners and the public. At the beginning of the counseling, the community was asked to brainstorm related to food-borne diseases and their impact on health and work productivity then continued with the provision of materials. The enthusiasm of the community in this activity was very high seen in the number of attendances. All the people who were invited were present and listened in when the counseling materials were given. Several people inquired about a good food processing process, its shelf life, and how to manage the rest of the food produced. Although some aspects were difficult for the community to fulfill, such as the infrastructure and facilities for food production houses, which are still far from good. In this outreach activity, the main achievement was an increase in knowledge so that there was an initiative to improve food production patterns better.



Fig. 1. Counseling activities

The second activity was training related to safe production houses and along with the third activity assistance in several production houses spread across the village. With this training, the community will become more open-minded and understanding, especially those who have tempeh businesses. Although in practice it cannot be the most ideal, there was a desire from the residents to slowly improve the conditions of the production site to achieve the ideal condition.

Generally, the production room was the insufficient condition, the base was still soil, the walls were woven bamboo, and there was no plasterboard on it. The windows and doors have no insect barrier wire and after using the bathroom, there was no sink for washing hands. This was certainly prone to contamination. This training activity was only limited to increasing understanding for the community, so there has been no physical intervention. Some of the limited conditions in the production space as mentioned earlier were by keeping the food in the production process in a clean condition such as being closed. Then the door during production was tightly closed. For windows, they may be opened, but they must be far from the trash heap so that no flies or other flying animals enter the production room. For the roof, it should be cleaned regularly to avoid any dirt from the roof falling onto the manufactured material. Production mentoring as show in Fig. 2.



Fig. 2. Production mentoring activities

In the mentoring stage, the community was accompanied by a team to apply knowledge of safe production spaces at their respective production sites. Community members who have been given socialization about safe production house arrangements try to simulate in their production space. The team consisting of students who had been previously trained to participate in the chili food production process explained how to process food according to the correct rules. Even though they were not completely ideal, they were becoming more aware and were expected to be able to change little by little the conditions of the existing production houses. Behavioral changes that have begun to increase were starting to apply personal hygiene and preventing cross-contamination of hazardous materials by keeping the production site away from hazardous and potentially harmful substances.

This community service activity has not yet reached the stage of assistance to get P-IRT. However, the training of safe production houses was a big issue that was quite important to convey to the community considering the infrastructure changes that can't be implemented in a short time. Similar community service activities were also carried out by Kurniawan et al in the cake business in Ponorogo by providing training on how to produce good food for the home industry by meeting production requirements in the form of location requirements, buildings, equipment, water supply, facilities, the health of the people involved, producing, food labeling, product storage, and others. The program was able to bring cake businesses in Ponorogo to P-IRT [11].

Good food processing training was very important to implement because it can affect the health of consumers if it was not implemented properly [12]. Koro benguk tempeh product was one of the industries that need supervision in its processing because it was prone to unsafe production processes. A similar product in the form of tofu in Semarang was found that there were 12 components of CPPB-IRT that were not fulfilled from the 14 components examined so that they could endanger consumers because of the presence of hazardous materials and unsafe practices in their processing . Likewise, what was found in Mustika Langgeng Jaya UKM, it turned out that based on the evaluation results, it was found that 7 elements did not meet the CPPB requirements and were classified as serious non-conformances, there were 4 elements classified as critical mismatches, 1 element classified as major non-conformances, and 1 element classified as minor non-conformities, so that CPPB-IRT assistance activities are necessary during the food production process so that there are no violations of existing provisions [13].

The next program that needs to be carried out in the koro benguk tempeh industry was assistance in setting up safe production houses and the production process. In addition, it was also necessary to make improvements if any inappropriate practices were found. One activity that could be an example was the evaluation of the implementation of CPPB using the CPPB-WISE (Work Improvement in Small Enterprise) checklist, the purpose of which is to improve the production process and meet standards to obtain SPP-IRT for SALA cracker IRT in Boyolali Regency [14].

Koro benguk tempeh industry in Mertelu still needed to be improved in many aspects. So, this program can become a good beginning in increasing the production quality in this industry. By improving the production house and the production process, SMEs can increase their product quality and process for P-IRT license, and they can increase the economic value of product can expanding the market of the product [15], [16]. So, legalization of SMEs will strengthening the business [17].

In addition to obtaining PIRT certificate, another challenge for SMEs is halal labeling because people are increasingly aware of the importance of halal labels on the food they use. Halal Mentoring Activities have been widely implemented and have been able to improve product quality and consumer confidence [18], [19].

Other issue that needed to be upgraded is packaging, management, financial records, and calculation of selling prices to maximize the business . Therefore, the society and SMEs still need training in many aspects which involving multidisciplinary approach to achieve sustainable economic empowerment [20]. Production training as show in Fig. 3.



Fig. 3. Production training activities

#### 4. Conclusion

The safe production house training program activities can be carried out well in Mertelu Village, Mertelu Kulon, and Gandu. Residents were very enthusiastic to participate in this activity seen from the presence and the question-and-answer process at the activities carried out. After training and mentoring, the community gradually began to make changes to the production process starting from personal hygiene, production room management, food hygiene improvement, and food production waste management.

This activity has not been able to completely change the physical facilities of the koro benguk tempeh production house. Therefore, it is necessary to carry out the next program activity in the form of assistance in setting up a standardized production room so that it can facilitate this industry to obtain P-IRT.

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