Trends to the development of combined foods to create functional foods

S H Bintari\textsuperscript{1,}\textsuperscript{*}, M F Putri\textsuperscript{2}, D D Saputro\textsuperscript{2}, Suwahyo\textsuperscript{2}, Sunyoto\textsuperscript{2}

\textsuperscript{1} Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang, Indonesia
\textsuperscript{2} Department of Mechanical Engineering, Faculty of Engineering, Universitas Negeri Semarang, Indonesia

\textsuperscript{*}Corresponding author: harnina@mail.unnes.ac.id

Abstract. An overview of functional food trends from food combinations of several ingredients has been seen. Prediction of functional food through the realization of a combination of several foodstuffs, namely the combination of animal and vegetable ingredients and their relationship with fermented food continues to increase. In the pandemic era, people need healthy foods that are comprehensively contained in combination foods in one type of food. This has an impact on increasing the nutrients in it. According to functional food studies, it is said that if the food is a daily diet containing important nutrient sources, i.e. protein, dietary fiber, probiotic bacteria, antioxidants, halal and good food. Currently, dietary changes are taking place, namely towards a more diverse diet. Changes in food consumption at the lowest level to the region to the global level must meet the criteria for healthy food and good for overall health. During the Covid-19 period, people needed to make a switch to eating foods with complete nutrition, variety and health. During the last 8 months the implications of food for health have increased. Several types of functional food have been realized as a result of a combination of animal-plant complex foods and their micronutrient and antioxidant elements, such as milkfish and tempeh; meat with tempeh, wheat flour with tempeh. It turns out that the food products produced are preferred and have a trend that can be developed widely for now and in the future. The impact will be beneficial for business actors, agriculture, human health and the environment.

1. Introduction
Fermented foods have unique functional properties that provide several health benefits. Food fermented for many reasons, including the enhancement of nutritive value, removal of anti-nutrients and the improvement of sensory characteristics [1,2]. Fermented foods such as milk and other fermented foods have benefits for health in general because there is biotransformation of nutrients to increase body immunity and some are useful for preventing cardiovascular disease, cancer, gastrointestinal disorders, allergic reactions and diabetes [3,4]. During the Covid-19 period, people needed to make a switch to eating foods with complete nutrition, variety and health. From many research results, tempeh is a fermented food that has been known as a healthy food and is called a super food. Meanwhile, in the current pandemic era, people need healthy food in one type of food that is served. This can be realized in the combination of several ingredients by applying fortification / supplementation or substitution technology. It is a modern functional food that has a comprehensive source of essential nutrients and antioxidants [5]. The purpose of this research was to realize modern functional food from a combination of tempeh with other ingredients by applying the concept of fortification, supplementation or...
The tempe commodity used comes from good quality soybeans, made by applying hygienic production methods. The resulting tempe product is a tempe product G-1, where from the G-1 tempe product, it is known that carbohydrate, lipid, protein, mineral and antioxidant nutrients are 16.65%; 6.6%; 20.63%; 1.37% and 1.1 gr / 100gr. In the G-1 product, tempe still looks like tempeh with its processed products which are still physically visible, for example tempe mendoan, dry tempeh, and tempeh in food processing. Meanwhile, the second generation of tempeh or G-2 products are in the form of tempeh flour with the same nutrients as fresh tempeh, namely carbohydrates, protein fats, minerals, vitamins, and antioxidants. Fresh tempeh products, tempeh flour and over fermented tempeh can all be used as additional food ingredients. Furthermore, for the G-3 tempe product, namely the 3rd generation tempe industry. Examples of the 3rd generation of tempe bioactive compounds are isoflavones and SOD. Food with hygienic and standardized processing is characteristic of modern food and produces functional food products that are appropriate for consumption in this era of adaptation to new habits. This trend towards modern food is very important because eating food must be linked for positive and sustainable health and health effects. This study provides information on several modern foods, namely functional foods made with raw materials of tempe and / or tempeh flour. Tempe is a fermented soybean product from Indonesia where the nutritional content of tempe is better than unfermented soybeans. The main problem of tempe is its relatively low shelf life, therefore the product of G2 tempe is important and the results of the research show that in general the nutritional value of the protein of Grobogan local soybean tempe flour has the same quality as GMO soybean tempe.

2. Method
This observational research with a qualitative descriptive approach was carried out as a start to open new insights related to modern functional food, the second generation (G-2) diversified product of tempe as daily food in the adaptation period of new habits. There are 4 (four) stages, namely the determination of raw materials and types of diversified products, the principle of processing methods; chemical testing / organoleptic testing and training in the manufacture of food products.

In the second generation of product diversification of tempe as daily food in the adaptation period of new habits, including tapioca flour-tempe flour into the cireng/the cilok; chocolate bar - tempeh granule/tempe flour to tempeh chocolate, tempeh-sugar flour into caramel tempeh; fresh tempe—tempe sauce becomes satay tempe, tempeh-based frozen fish food, crispy stick tempe, nugget tempe from tempeh flour. The principle of how to process products using fortification technology/ supplementation technology and/or substitution technology depends on the type of food implementation technology included 1. Vegetable/animal material as a supplement in the process of making tempe products to strengthen the nutritional value of tempe; 2. Tempe as a supplement in food and drinks as a source of nutrients and a source of antioxidants. Tempe resulting from innovation is added as a supplement to the process of making food/beverage products.

3. Results and Discussion
New habitual adaptation phenomena have had a positive impact on people's diets on the types of food they choose to eat and consume to help increase body immunity. On the other hand, the provision of a variety of functional and affordable foods is not consumed at home and / or in public places everyday. One of the alternative products in Tempe UKM is tempe flour. Its application in affordable, nutritious and healthy food, this can be achieved by focusing on the presence of modern food, namely food that is characterized by many people's preferences, simple, fast presentation of functional food raw materials and its products are widely known. The phenomenon of modern food is partly due to the intervention of the raw materials used, namely tempeh flour (Table 1) [6]. This article describes the food diversification of the second generation of tempe products as a modern food that can be consumed daily and disseminated in Central Java. This was triggered by the pandemic era which changed people's diet to transform towards simple home food with local raw materials.
Table 1. Addition of tempe / G2 flour and or G1 fresh tempe to food product

| Food                           | Maximum amount of tempeh flour G2 / G1 added (%) | Substitution | Supplementation | Description                  |
|--------------------------------|-------------------------------------------------|--------------|-----------------|------------------------------|
| Tempeh chocolate               | ---                                             | 20           |                 | Tempe flour and granules     |
| Tempe-based frozen fish food    | 30-50                                           | ---          |                 | Flour and fresh tempeh       |
| Crispy stick tempe              | 100                                             | ---          |                 | Tempe flour and granules     |
| Nugget tempe                   | 20-40                                           | ---          |                 | Tempe flour and granules     |
| Caramel tempe                  | 60-80                                           | ---          |                 | Tempe flour and granules     |
| Satay tempe                    | 100                                             | ---          |                 | Tempe flour and granules     |
| The Cilok-cireng               | 10-20                                           | ---          |                 | Tempe flour and granules     |

Table 2. Food diversification products and Organoleptic test results with 5 scales

| Food                           | Organoleptic Test Score | Very like | Very much like | Description |
|--------------------------------|-------------------------|-----------|----------------|-------------|
| Tempeh chocolate               | v                       | ---       | 4,1            |             |
| Tempe-based frozen fish food    | ---                     | v         | 4,4            |             |
| Crispy stick tempe              | ---                     | v         | 4,5            |             |
| Nugget tempe                   | v                       | ---       | 4,3            |             |
| Caramel tempe                  | ---                     | v         | 4,8            |             |
| Satay tempe                    | ---                     | v         | 4,5            |             |
| The Cilok-cireng               | ---                     | v         | 4,8            |             |

The results of observations of several diversified products from raw materials of tempeh G1 and G2 to mainstream food were founded daily, namely tempeh chocolate, tempe-based frozen fish food, crispy stick tempe, nugget tempe, caramel tempe, satay tempe.

The cilok / the cireng made with the addition of tempeh flour (Table 1) and the results of the preference test with an average of 4 (Table 2). This can be understood because this product is well known and familiar and the addition of fresh tempeh / tempeh flour is appropriate for as not to change the taste and flavor of the original product. Meanwhile, the tempe and tempeh flour used are made with GHP technology or clean production methods [6]. GHP technology relies on the process of making tempeh twice heating, namely heating 1 by boiling and heating second by using LTLT pasteurization [5]. addressed. It is hoped that there will be good and healthy food so that people can be healthier in general food modernism era [12,15]. Tempe is added to complement nutrition for the human body. Therefore, the best strategy for the community so that tempe can be a supplement is good, healthy, and nutritious tempeh [13,14]. Good, healthy and nutritious food is feasible in every food, in this case it is added to the appropriate type of food to add nutritional value, taste and affordability [9,16].

In Table 1 and Table 2, it can be seen that caramel tempe and the cilok / the cireng with the addition of tempeh flour up to 10 - 20% are very popular, respectively, with total flavonoids, antioxidant activity and total protein of 10.10 mg/100g; 7.55% and 12.4%. This illustrates the favorite food of school children. If there is additional tempeh flour that can be pushed, it can be provided at home and in grocery stores or food stalls near the house. Functional food for children and adolescents served daily has the potential to be developed and this snack is a healthy food because there are additional elements of tempeh which are quite relevant. Tempe is a functional food rich in nutrients and has been proven to be favored by domestic and foreign people [16,17].

4. Conclusion
Various foods can be encouraged to become healthy food by adding food ingredients that clearly have a role as functional food. The second generation of tempe (G2) is an intermediate product that acts as a supplement to encourage the emergence of healthy food in the era of adaptation to new habits. The existence of G-2 tempe diversified foods has grown and can be accustomed to daily home food and forentrepreneurship in household SMEs or cafes.

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