
Tempeh, Healthy Food from Indonesia

Tempeh is one of the most popular type of fermented food. Tempeh is a traditional soy product originating from Indonesia. It is made by a natural culturing and controlled fermentation process that binds soybeans into a cake form. Tempeh is a fermented product made from soybeans that have been soaked and cooked to soften them (Astuti, 2000).

The name of Tempeh came from Indonesian word referring collectively to a variety of fermented foods that are typically tender-cooked legumes bounded together by a dense mycelium of fragrant white *Rhizopus Oligosporus* mold into compact cakes shape (Ko and Hesseltine 1979). *Rhizopus oligosporus* is the main microorganism plays important role in fermentation process. Besides fungi, other microorganisms may also participate in tempe fermentation process (Barus et al., 2008). The use of *Rhizopus Oligosporus* bacteria as a tempeh starter in Indonesia may have been due to its better adaptation towards Indonesian climate.

Tempeh was a very unique food among major traditional soy foods in that it is the only one that did not originate in China or Japan. It was originated in Indonesia, almost certainly in Central or East Java, almost certainly prior to 1800, and perhaps as long ago as a thousand years or more. Tempeh also originated from several centuries ago on the island of Java, in today's Indonesia. In Indonesia too, Tempeh processing could be the oldest food technology in the history of Javanese people. Tempeh might have been introduced by the Chinese who are making a similar product, soybean koji, which are dehulled soybeans fermented with *Aspergillus* molds..

Meanwhile, much early research and publication was done by a Dutch scientists, in Dutch. Furthermore, Tempeh was officially produced for commercial purpose in Europe in year between 1946 and 1959 and by 1984 there were already 18 Tempeh companies developed in Europe. The earliest known reference to tempeh in the United States was made by Stahel in 1946. Extensive research work on tempeh began in the early 1960s at Cornell University (under Dr. Steinkraus) and at the USDA Northern Regional Research Center (under Dr. C.W. Hesseltine and Dr. H.L. Wang).

In fact, America's first commercial tempeh was produced in 1961 by Indonesian immigrants, and the first commercial production by a Caucasian started in year 1975. The earliest known reference to tempeh in Japan was introduced by Nakazawa in 1928. Starting in 1983, with the soymilk boom in full swing, Japanese food companies have started to make tempeh in larger quantities to fulfill people's need at that time.

Tempeh was originated on the island of Java at least several centuries ago. During that time, the people of Java neither had a formal training in microbiology nor chemistry but they have achieved to develop a remarkable family of fermented foods called Tempeh. In general, tempeh is produced by small scale at home industries with poorly controlled fermentation process that causes the variation of tempeh flavours, for example bitter taste often appears in tempeh (Barus et al., 2008).

Today we might call these products meat analogs, since they have much the same texture,

flavor, and high protein content as various flesh foods. The people also learned to make Tempeh from oilseed presscakes where the source was from protein-rich cakes left after pressing the oil from oilseeds such as peanuts or coconuts, okara (the soy pulp remaining after making soymilk or tofu), and other agricultural wastes, whose high fiber content and relative indigestibility make them otherwise suited only for livestock feeds. To European, the earliest reference to Tempeh appeared in 1875 in a Javanese-Dutch dictionary. In the 1970s, the banana leaf that was used as a container for the production of Tempeh was replaced by the use of plastic bags packaging.

In Europe, Tempeh is also known through the Dutch who once colonized Indonesia. In 1895 the Dutch microbiologist and chemist Prinsen Geerligs made the first attempt to identify the Tempeh mold. The first Tempeh companies in Europe were developed in the Netherlands by immigrants from Indonesia that have further knowledges regarding the correct techniques in producing high quality Tempeh.

References:

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