

Molecular gastronomy during cooking media essay



**ASSIGN
BUSTER**

The art of cooking is as old as humanity and cooking is such an important part of our world which obviously needs scientific attention. Although science has contributed to food safety, hygiene and nutritional aspects, little has been done towards innovation and invention of new dishes. The ancient Greek words, gastro means stomach and nomos means law, collectively termed as gastronomy, which in contemporary hospitality industry means food and culture. It generally refers to the study of relationship between food and culture with interdisciplinary approaches. This literature attempts to explain molecular gastronomy, its origin and evolution, along with its relevance and contributions to the contemporary hospitality industry.

Cooking and gastronomy

Even though molecular gastronomy has attracted media attention for quite a while, still there is confusion about the true meaning of the term. To explain this, cooking and gastronomy has to be distinguished first. Cooking is the preparation of raw food into edible, whereas gastronomy is the knowledge of whatever concerns man's nourishment. Gastronomy is about chemical and physical transformation behind the preparation of any food, for example, the reason behind egg white puffs up when whipped or mayonnaise becomes firm. (This, 2006). According to HerveThis, the science of food is not new but dates back to second century BC, when preparation of meat stock-the aqueous solution obtained by thermal processing of animal tissues in water- has been of great interest. Since then, scientists have been interested in food and cooking which gave way to molecular gastronomy.

If culinary history is scrutinised, it will be clear that, initially food experts studied the culinary science to steer clear of blind assumptions and

<https://assignbuster.com/molecular-gastronomy-during-cooking-media-essay/>

unscientific ways of cooking. But today, the science of food has reached its extreme in the form of molecular gastronomy, which chemically examines the food and cooking in its molecular level to give a new face for cooking and change the total concept of commercial cooking in near future.

Molecular gastronomy

The scientific discipline dedicated to culinary industry and to gastronomical phenomena in general has been called 'molecular gastronomy' the late Nicholas Kurti and HerveThis (This, 2005). Molecular gastronomy can also be defined as a field that attempts to improve the culinary techniques through understanding the composition and chemical transformations occurring in food during the process of cooking (Ankeny, Year Unknown). Gastronomy or molecular gastronomy is the science just like any other science in the world, which studies the cause and effect of anything that happens during cooking including the structural difference in same cooking ingredients of different quality, which have an effect on the final product. If we can answer the question, we can correct a mistake, use this knowledge to improve the cooking process or even invent new dishes or ways to prepare food. For example, if we know that when an egg is cooked, water evaporates, the proteins denature and polymerize to enclose water, we can even use substitute methods to cook it, like adding alcohol to it, which denature the egg proteins and gives the same result.

Molecular gastronomy also deals with the study of human senses and perception of taste, aroma, texture and temperature, in short, the sensory science known as chemesthesis (berham et. al, 2010). It studies the perception of senses in molecular level in order to understand how different

<https://assignbuster.com/molecular-gastronomy-during-cooking-media-essay/>

dishes are perceived as awful, average, good or delicious, when they are made of similar ingredients. Although chemesthesis of human beings are the same, people of different genre appreciates different types of food. For example westerner's cooking style is entirely different from Asians, and while Asians appreciate spicy food, most westerners do not.

At a glance, molecular gastronomy can be described as applying the techniques of food scientists to fine dining - drying, liquefying, gassing, freezing and generally transforming ingredients into surprising new forms and textures while maintaining the flavours. Early converts include French two-star chef Pierre Gagnaire, who added scallops with liquorice milk to his menu in 1991 (Hill. B, 2009).

Aim of molecular gastronomy

Being the science of cooking, molecular gastronomy has a few aims in the field of domestic and commercial cooking. It endeavours to remodel and scrutinise existing recipes, introduce new tools, products and methods, invent new dishes from the acquiring knowledge and use the appeal of food to promote food science (This, 2006).

Before analysing the aims, a significant question is that, who is actually interested in molecular gastronomy? Is it the chefs who are interested in chemical and physical science of food or scientists who are interested in food and cooking? Answer could go both the ways. Chefs are always interested in innovation in culinary art, which obviously needed scientific help to explain the reasons for transformation that occur in the cooking process. For remodelling a recipe or innovating a new dish they had to understand what

actually happens to any food when it undergoes different forms of cooking. For this reason they needed scientific help to explain the reasons behind any cooking process or transformation. But at the same time, scientists are interested in the scientific aspects of food rather than innovation and remodelling recipes. Hence, molecular gastronomy can be said to be teamwork of food science and cooking or in other words, chefs and scientists. However, chefs made use of scientific explanation of cooking processes which resulted in innovation in food industry or more apparently molecular gastronomy. But today, with worldwide recognition of molecular gastronomy, it has evolved as a collaboration of chefs, scientists, companies in food industry and culinary schools. In addition, efforts are being made to incorporate the new science into culinary schools to impart knowledge of molecular gastronomy into upcoming industry professionals to provide a new visage to the food and beverage industry.

Continuing with the aims of molecular gastronomy, remodelling and scrutinising the existing recipes is one of the primary attempts, initially by educating the professionals about the chances of scientific approach to cooking art. Complex disperse system's formalism (This, 2006) was introduced to describe the microscopic structure of preparations with different phases, to help in this attempt. Consequently, many of the existing recipes has been modernized or modified to correct the mistakes, attain a better product and to better favour the palate of the customer. Educational efforts are equally important to standardise these remodelled recipes to achieve consistency. For this reason, several programmes were introduced in culinary schools internationally. In 2001, the experimental workshop on

flavour was created in French schools. Universities in various countries, such as the Netherlands, Denmark and Argentina have set up professorships in this discipline. Since then, Canada and France have introduced new syllabus for culinary schools to include knowledge obtained from molecular gastronomy. In 2005, the Institute for Advanced Studies on Flavour, Gastronomy and the Culinary Arts was created in Reims, France, to promote gastronomy knowledge, including molecular gastronomy.

New or remodelled recipes to a great extent involve new cooking techniques which need new systems and tools. So, quite obviously, molecular gastronomy is introducing or giving way to new cooking tools and techniques, taking the art of cooking into another level. In terms of new products, with the help of molecular gastronomy, it is now possible to customise the food to the need of different people with different diet requirements, without restricting the taste and palatability of their meals. For example, now a day, caviar can be artificially made (in fact something looks and tastes like caviar) from fruits and chemicals. Similarly, using the secret of food chemistry, different ingredients can be used to make several dishes which look, smells and tastes like original dishes, which have no ingredients of the original dish. Even though the dishes tastes and feel like original, the ingredients can be different, thus giving us an opportunity to try different dishes with in the diet restrictions or in other words, altering an unhealthy food into healthy one without altering the original taste of the same.

Health programmes that promote a balanced diet cannot succeed if people are unable to make intelligent choices about food. Traditional cooking is not a guarantee either for healthy food or for a rational preparation of food. This <https://assignbuster.com/molecular-gastronomy-during-cooking-media-essay/>

is where the scientific programme of molecular gastronomy can be useful. Science is the basis for new technology and innovation and it is not different in gastronomy. The achievements of science in the field of gastronomy have won a definite recognition worldwide. However, for chefs, and hopefully scientists as well, the main aim is to surprise and delight their guests with exciting, tasty and healthy food.

Molecular gastronomy in contemporary hospitality industry

With the development of tourism industry, the science of domestic and commercial cooking has moved from the hands of a few key players to the dominion of serious scientific venture. In the context of serious competition, every element in the food service industry is striving to adopt innovation and novelty using technology, to which molecular gastronomy has given a new face of distinctiveness. The cooking chemistry or molecular cuisine has helped the modern restaurants to a great extent to enhance cooking speed, service speed and very obviously the food quality along with the ability to keep the food fresh.

A few techniques in molecular gastronomy

Colloids

Colloid is a chemical substance dispersed in molecular level evenly throughout one another. The particles of the dispersed substance are only suspended in the blend, unlike in a solution in which they are totally dissolved. This takes place because the elements in a colloid are larger than in a liquid. The colloidal system is used for making different types of foam, solid gel, emulsion and solid emulsion.

Lecithin (Lecite)

Lecithin is phospholipids extracted from soybean, partially water-soluble, and an emulsifier that helps fat and water stay together. For that reason, it is often added to chocolate, cheese, margarine, and salad dressing. It has health benefits, such as reducing cholesterol intensity. It is often added to flavoured liquids and then mixed to generate foams that are topped onto dishes to offer added appearance and texture.

Maltodextrin powder

Maltodextrin is a complex carbohydrate consisting of dextrose (glucose), maltose, maltotriose and higher polysaccharides. Maltodextrin is used in a wide variety of products, extending from bodybuilders, animal trainers (horses and greyhounds) to pharmaceutical manufacturers. Tapioca maltodextrin is a popular product used to make powdered oil and fat products such as white truffle powder, and olive oil powder.

Guar Gum

Guar is a white free flowing powder, completely soluble in hot or cold water to form a tasteless, odourless, non-toxic solution. Guar gum powder has five to eight times the coagulating power of starch. It is mainly used as a binding agent, mixtures, thickener, and emulsifier in food products, such as cheese spreads, ice cream and other frozen desserts.

Methylcellulose

This forms a gel when heated, and melts into liquid when it cools. This is similar to gelatine. This quality can improve a food if it undergoes heating in its preparation and requires stability at cooking temperature (for example:

<https://assignbuster.com/molecular-gastronomy-during-cooking-media-essay/>

preventing a sauce from thinning out). It is used as a binding agent for foods that need to keep their parts collectively. Products such as pasta, vegetable burgers, onion rings, and potato products are improved by its combining strength. This is due to its cohesive nature at low temperatures and the structural integrity at higher temperatures.

Implementation and provision of MG in hospitality industry

Molecular gastronomy principles, practices and provisions items have captured the intellect of both the chefs and their customers worldwide. Although initially intended to cater for the high purpose of the gourmet market, molecular gastronomy has been welcomed in assorted areas of the hospitality industry. Useful dining restaurants, cafés and bistros, avail venues, specialist bars, prestigious and mainstream hotels; and all the more establishments that specialise in pastry and desserts are incorporating this style of cuisine to assorted degrees into their operations.

As any other fields, molecular gastronomy also attracted much criticism from food writers and chefs around the world. Many established chefs did not accept molecular gastronomy as scientific gastronomic phenomena but labelled it as temporary style of cuisine (Hill, 2009). But in the context of Australian hospitality industry, hampering of successful insertion of molecular gastronomy was a lack of firsthand experience and training, which was recognized both by industry as well as the government. Another barrier facing the Australian industry is the inadequate supply and high prices for specialist food chemicals and equipments to incorporate various techniques of molecular gastronomy. The distribution of these chemicals and

equipments are limited to a few suppliers and shops. Even though this is the <https://assignbuster.com/molecular-gastronomy-during-cooking-media-essay/>

case, Hill had identified a few restaurants in Victoria such as Fenix, Interlude and Vue de monde that offer limited molecular gastronomic techniques throughout their menus.

Competition

There is no doubt that hospitality industry is facing increasing competition than ever before. To withstand this pressure of competition, chefs should be able to remain innovative and attract new as well as existing customers by satisfying their demanding increasing sophisticated expectations. In fact people are always looking for new and unique experiences. As a result of this, in recent years there has been a great emphasis on innovation, creativity and importance of innovation competency. In response, many chefs has accepted the concept of molecular gastronomy and working on it to achieve greater innovative competency and occupational competency.

In his model of innovative culinary competency, Lei Hu (2010) has positioned molecular gastronomy among new technologies that helps innovation, where other factors being creativity, culture, aesthetics, product, service and management. This underpins the fact that molecular gastronomy is a scientific gastronomic phenomenon as mentioned earlier in this literature, than a temporary style of cooking. In the age of technology dominating every aspect of human life, molecular gastronomy is the new cooking technique dominating man's nourishment.

Culinary tourism

Culinary tourism is a relatively new industry came into being in 2003. It can be described as a subset of tourism, where tourists also consider the

enjoyment of interesting and traditional or novel and innovative food and drink, while people travel. This subset of tourism promotes every gastronomic experience, with every tourist pursuit for unique and memorable eating and drinking experience. Tourists always tend to consider the local cuisine of destination or at least consider the available cuisines, as dining out is one of the top most tourist activities and nearly 100% of tourists eat out when they travel. This trend gives a huge opportunity to restaurants use molecular gastronomy to innovate and attract their patrons. Molecular gastronomy in many parts of the world has revolutionized restaurant dining experience and at the same time, led to new enjoyment and appreciation of food. A few examples include El Bulli in Spain and the Fat Duck in the United Kingdom (Barham et. al. 2010), two restaurants that since adopting a new scientific approach to cooking have become widely regarded as among the best restaurants in the world. This is noticeable evidence of people accepting or influenced by the new cooking science or molecular gastronomy.

When we look into the tourists trends, the opportunity for success of molecular gastronomy is apparently huge. 27 million leisure travellers have participated in culinary related travel in the last 3 years in the US, while spending \$12 Billion directly on culinary related activities (Schmantowsky, year unknown). The actual market segment includes more affluent people, who are highly motivated to experience unique and memorable dining experience. Studies prove that on an average, one third of total travel budget goes towards food related activities. The top six culinary tourist destinations include California (14%), Florida (10%), New York (7%), Texas (6%), North Carolina (4%) and Georgia (4%) (Schmantowsky, year unknown).

Molecular gastronomy could be a catalyst to culinary tourism which has a great potential to increase tourism generated revenue and the strategic partnership of culinary schools, hospitality organisations, chefs and scientists is the key to success of it.

SWOT analysis

Strengths

Demand: From the time restaurants started utilizing molecular gastronomy for developing new dishes, public has widely accepted the uniqueness and newness of the experience. From the chefs' point of view, MG is a tool for innovation in the field to attract their customers and stay in business.

Without thinking about any downsides of the technique, thus the public as well as the industry has widely accepted molecular gastronomy, while expecting and demanding more from it. This increasing demand has made or will make molecular gastronomy much popular worldwide.

Hospitality industry's enthusiasm to change: from the very early time, hospitality industry is changing every now and then, because of changing trends and tastes of customers, increasing competition, technology adoption, and varying needs of customers. In fact this is the ever dynamic industry when compared to any other industries. This enthusiasm or eagerness of hospitality industry in general provides a great opportunity to make use of molecular gastronomy in its operations and a catalyst for further changes. Thus the science of food has got great support from the hospitality industry. As technology is easily imitated now days, due to

globalisation, molecular gastronomy techniques could be easily learned by enthusiast chefs around the world.

Supply of raw materials: due to the increasing demand for molecular gastronomy, the demand for the ingredients also has raised especially various thickeners, stabilizers and emulsifiers. Since the success of restaurants like El Bulli and the fat duck, in 2005-06, this demand has further elevated. The supply of these ingredients is only available in large quantities to the food industry, restricting the use of these chemicals by untrained or unprofessional people, which is on a safer side (Iersch, 2007). In Australia Suppliers has positive prospects to add value and expand their product range and services to the industry.

Ingredients for molecular gastronomy

Weaknesses

Molecular gastronomy is still gaining popularity, and the knowledge and experience of it are limited in most parts of the world within the industry and culinary training providers. It will take fair amount of time to spread throughout the industry and will take further long period for standardisation of new recipes. Also there is limited accessibility to special ingredients and equipments such as smoking machine, blow torch and gastro vac which are much needed for cooking techniques, which is a constraint for this field at the moment. Due to the scarcity and limited accessibility, most countries working on molecular gastronomy are relying on imported goods and equipments which resulted in increased costs for the same. As most countries are relying on French and Spanish resources, where molecular

gastronomy originated from, there is a limitation in independent research and experiment in the field. This situation is also made worst by the language barriers between these countries. In addition, the existing workload in the hospitality industry provides less time to chefs for research and experiment in molecular gastronomy. Also there are limited technical books published in English language making things much more difficult.

Opportunities

Hill recognizes a few opportunities for molecular gastronomy in the Australian hospitality industry, which is more or less similar to many other countries. Countries with limited access to the resources could gain knowledge and skills from internationally recognised expert chefs and broaden their set of skills by integrating molecular gastronomy into the existing culinary programmes. Apart from this professional networks should be promoted with increasing research and experiments in the field. Acquiring knowledge should be transferred to culinary students and the industry professionals to develop a culture with strong gastronomic foundation.

Threats

When focusing on threats to molecular gastronomy, the major barriers hindering the growth are once again the increased costs of commodities and equipments due to increased demand and supply issues. Another threat is the changing trends and demand of today's customers which may lead to decreasing popularity and in turn lead to less interest among chefs and decreased need for training in this area.

It is contradictory to say that customers has widely accepted and are demanding for molecular gastronomy but at the same time changing customer behaviour can hinder the growth of molecular gastronomy. This is because the popular trend created by new dishes evolved from molecular gastronomy has been widely accepted by the public due to its newness and unique nature. But once it is popular and widely available everywhere, it is not any more new or unique. Moreover, people who have tried the molecular style of cuisine may not go for it every time, but stick back to their favourite recipes, unless molecular gastronomy can create captivating recipes every now and then. However, these reasons are not at all a barrier for the growth of this particular discipline till it gains its popularity around the world.

There is another aspect of molecular gastronomy which is not emphasised in any of the studies: that is about the health. Most of the chemicals which are directly harmless to human body often have side effects. So, the intense use of chemicals in the cooking process should be of great concern. For example, most of the allopathic medicines which cures disease, mostly have foreseen negative side effects causing ill health. Just like that extreme use of various chemicals in molecular gastronomy to alter the physical form of foods should be studied in detail before it is commercially popular. More over the technique to change the texture, consistency and taste of food in molecular level could be maltreated in future just like invention of atomic reactions meant for energy are later used to make atom bombs, which is now a threat for human existence.

Conclusion

Molecular gastronomy is a pathway to innovation in culinary industry for chefs and a wonderful new enjoyment for the customers. Even though this field of science has proved its scientific nature and uniqueness, still there is a second opinion among the chefs in the industry. This may be due to the fact that major role in this respect is limited to the French and Spanish with limited resources available to the rest of the world. Better translation of the resources and international co-operation among the professionals may help to educate everyone working in the industry, thus creating a holistic awareness about this discipline. But at the same time, while molecular gastronomy gives way to unbelievable innovations, there is a need for preserving the old traditional recipes which remain successful without any alterations for years.

Molecular gastronomy is a milestone in the culinary industry, taking it into another level, while correcting the old recipes scientifically and inventing new trendy ones. Hospitality being an ever dynamic industry, and with the evolution of culinary tourism, it became essential for entrepreneurs to exhibit innovation and new trends in customer service, which is enhanced by molecular gastronomy to a great extend.

Although this is the case, due to limited awareness and popularity among the public, certain areas of molecular gastronomy is still in distrust. Intense use of chemicals to change the physical and chemical properties of food is giving room for scepticism. This calls for a controlling body in each country and globally for close monitoring the work in molecular gastronomy, as there are organisations to control food hygiene and nutrition. This will provide certain <https://assignbuster.com/molecular-gastronomy-during-cooking-media-essay/>

norms for experiments and new recipes using the molecular gastronomic technology, before it reaches the public.