

**Dairy and Food Process & Products Technology**  
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**Lecture - 08**  
**Quality of Food**

If you remember, in the previous class we stopped at this that what is the quality term in food, right? Because, again this with this page you have to show because this is a part of that Dairy and Food Process and Products Technology, right and we were discussing that what is the quality because quality is such a big word; anywhere it is not only in food anywhere quality is a such a big word. It encompasses many many things, desirable, undesirable many many things liking, disliking, requirement, non requirement, law, safe, unsafe.

Nothing is beyond the word quality, everything come under quality. If you go to buy anything you will see same product people will say this is because of the quality difference the product is different whether that product might be under some branded name or may not be under branded name, but still there may be difference in pricing. So, everybody plays with the term quality, but science cannot play like that unidentified or without any definitions, right. So, science how science defines food quality let us look into that today, ok.

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**FOOD QUALITY : WHAT IS IT?**

- Food quality is the extent to which all the established requirements relating to the characteristics of a food are met. Examples:
  - Identity of a food in relation to a standard (e.g., standardized food)
  - Declared gross or net quantity (e.g., weight or volume) of a unit of the food or net fill of a food container
  - Declared or claimed amount of one or more stated components of a food
- Appearance (e.g., size, shape, color)
- Flavor
- Aroma
- Texture
- Viscosity
- Shelf-life stability
- Fitness for use as human food
- Wholesomeness
- Adulteration
- Packaging
- Labeling

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So, if you look at food quality, what is it? We can say that food quality is the extent to which all the established requirements requiring relating to the characteristics of a food is met, right. So, you can give some examples. For example, if you can identify or identity of a food in relation to standard so, for a definite food that is why I said identify.

So, if you identify a food how the identity of that food is identified with reference to a given standard because as I said earlier that for the safety of the food safety means, safety of the people who are consuming, because controlling agents or controlling or monitoring departments monitoring personal who are associated with this first the everybody look into the safety of the consumer who is consuming, right.

So, if consumer is for that when you are identifying the particular food product and when you are saying that the identity of that food product is as per with the standard given then you can call it to be a ok, a quality product. Or, if the declared gross or net quantity in many cases you will see because nowadays it has become a mandatory that if a product is under some packaging whatever we packing within some four walls if it is that then it is a mandatory that it should get it should be written what is the net weight of the product, right.

It is not like going to everyday market and buying fruits and vegetables or fish, meat a poultry like that if that is also under any prescribed for that is in any packing material then it should have the quantity mentioned, right.

So, if the quantity what is mentioned in the product in terms of either weight or volume that is the quantity. So, which depending on the product type you it may be in terms of in terms of weight or it may be in terms of volume, right. So, because volume and weight normally both are not given. Normally, volume and weight both are not given, but in typical cases it could be right, but those who are which are more significant in terms of volume they will be given volume and those which may be define in terms of weight they are given in terms of weight.

So, if that declared standard or declared or claimed quantity is there then that could be another aspect of the quality which people or consumer are normally worried about or can think of then declared or claimed amount of one or more stated components of a food, right.

Stated components means in many cases you will see that the product is on the on the packaging it is written that this contains this materials, right. So, if it is mentioned there that is declared or claimed and if it is there then it is ok, but it is not there then definitely you can challenge or any consumer can challenge and that will deviate from the term quality, right. Now, as of now we are telling one or two measurable quantity like weight or volume, right or the date of manufacture date of expiry.

So, this things comes under also the safety regulations date of expiry date of manufacture then batch number. So, that the typical product can be identified of course, that comes under law will discuss when we are going into law as I said when we are discussing law. Obviously, this laws are food laws are such, yes, they are stringent, but definitely as far as students are concerned that the time of classes like this it will not be so palatable because mostly informative and all this information's are either supposed to be kept in mind or noted down somewhere.

So, that as and when required you can you can refer it or you can negotiate with that, but here we need to know some parameters by which we can say quality in more precise form in a scientific way, right. So, for that we need to know some parameters which we can tell that ok, quality could be any or all of them so, it is not necessarily all of them have to be there.

So, that is why some or all or any of them may or may not be sufficient for the for the definition of the quality of defining a quality product quality food material, where I am saying one as we said in many cases the only weight is available right; may be there the weight is the fundamental thing rest of the things are all obvious. So, they are the only that parameter could be you good enough.

So, in that comes under this that we say that appearance right for example, size shape or color right, that is one parameter which can be measured because you can measure size you can also measure or tell what is the shape like whether it is regular pattern like rectangular or square that is in Cartesian coordinates or in cylindrical coordinate that is in cylinder form or cylindrical form or in spherical coordinate in spherical form.

If that shape is also defined or it may be also that there is not defined shape, right. It is not necessarily that the product has to be a defined shape or it should have defined shape, right, but if there then identifying is easier then you can tell that their product was of this

shape and its size was this may be shape it is a cylindrical, diameter is so much and height is so much.

So, we can say that the product is like that right colour in terms of appearance colour could be that that particular product could be yellow colour, may be red colour or a mixture of colours. So, depending on that, but it is measurable, right. So, parameters which you can measure based on that the quality terms can be set, right. Then flavor, flavour and aroma.

Now, in many cases if you see the English meaning of flavor and aroma that has one type right. But in typical in engineering and science base then you we can differentiate. Now, aroma is that odor which normally you perceive through the nose.

We may be coming after sometime in definite definition that what could be aroma and what could be the flavor. But for a common mans difference you can say odour is by the volatile components and it is through the nasal part which by which you can identify or you can detect, right. From the aroma of the mango which is kept may be 10 feet away from there you can say that it is a mango, right.

But, when it comes to flavor it all in combination it is not a single only smell only that will not be good enough to tell the flavor. Flavor it is mixture of taste then it is how because taste also will vary because something can be salty, something can be soury, something can be sweet or like that. So, depending on what type of taste it is having what kind of flavor what kind of aroma it is having; what kind of all put together it comes under the umbrella of flavor. So, we will define it definitely in a more precise way.

Then comes texture, right. In the term texture; obviously, there are many many parameters which and texture; obviously, food texture is quite different from many other textures, right. That is why you will see texture is normally the measured by some Universal Testing Machine or UTM, right; which normally texture is measured.

So, normally by that texture is measured, but the concept of this make texture this came up with because whatever as we said in the beginning in the previous in the very early classes that food we normally say that substance which we consume by mouth, right.

So, when we are consuming by mouth what you have it is put into your mouth cavity and you have the teeth, right. So, this teeth what it is doing it is crushing or it is grinding and as well it is coming some when you are you are chewing it some chewing, some gummy, some cohesive all these things come into your mouth feel right and these mouth feel has been translated to this UTM. Normally UTM if those universal testing machines there are many varieties many varieties means if you will go to the UTM section then you will see lot of companies have made this UTM, but for our food there a small units of by which that we call texture analyzer, right.

Basically, it is a force deformation card which you also will come subsequently. So, this force deformation card when you are obtaining from a machine you can definitely tell on the scientific parameters basis that its texture is like this. So, you can tell the quality of the material in terms of texture was this and that right, judging you can do. So, quality then has to be defined in terms of judging parameters some parameters by which you can judge that particular product right.

So, we have already said that the appearance in that shape size colour they are coming in flavor arome they are also coming in the another category then texture is coming in another category. Some other more scientific terms; of course, generally it commonly it is very difficult because I do not say that the texture or flavor also it is very easy for people to do, but yes there are some taste called organoleptic test, right by which when you are consuming what is the perception of the consumer who is consuming that typical product in terms of his appearance, in terms of his flavor colour or texture then that can be.

But when you are measuring with respect to something in terms of machine scientific machineries then you are more and that was in terms of person; I am consuming one I may have liking your feeling for something if somebody else is consuming another are the same we may have or may not have the similar liking or feeling like that.

So, the distinction could be based on some either biasness or whatever it be may might not be identical, but when you are saying in terms of machine right that appearance sides in terms of colours size all these you are measuring in terms of flavor aroma you are measuring in terms of texture you are measuring.

So, the parameters which you are saying, is of course, based on the typical measuring parameter and there it is having the repeatability, right. In organoleptic test when we do there it may or may not have the same repeatability; but, in terms of machine yes your repeatability should we have identical right. So, that is more more dependable parameter than even the organoleptic test, but obviously, organoleptic cannot be kept aside because ultimately it is people who are consuming.

So, their version whether it may be identical or may not be right that is why more when a new material is being brought to the market then this organoleptic test is done for wide variation right wide variety of people are being called and then their other than machine parameters. There are asked to give based on different hydronic scale: 9 point hydronic scale and 5 point hydronic scale out of which center will be the min medium and the maximum will be on the top or minimum will be on the bottom, right.

So, you can you can you can do scaling based on that and based on the number of observers how many people are taking. So, you can have a most statistically more more valid parameter for that right. So, that cannot be also kept aside. So, when we are talking quality this also to keep in mind that organoleptic test that how it is.

So, other than that as you have said some other scientific parameters like viscosity right, like viscosity. So, when we come to that viscosity definitely you have many many instruments by which viscosity generally it is associated with liquid food or semi liquid foods, right. Obviously, the solids do not have viscosity. So, viscous fluid means either it is a liquid or a semi liquid food whose viscosity may be known.

Now, how it may help you that for a given consistency that product will have a viscosity which you can measure through the instrument, right; which through organoleptic test means by taking it with your mouth filling you may not be able to judge. So, that is more inherit quality parameter then external or outer peripheral parameters, right.

So, viscosity if that can be measured then with whatever today also the same product will have one viscosity, after one year the same product should have the same viscosity if the quality of product is not getting changed, right. So, that can be another measurable parameter.

Then shelf life or stability of the product as we said in the beginning of this class that in most of the products nowadays it is written clearly on the periphery of the on the packaging of the product that what is the date of manufacture and what is the expected date of expiry right expected date of expiry that is also written.

Now, obviously, for as a consumer you would like to have the more this shelf life the more good or better for you because you have bought today if that expiry is for 7 days then after 10 days you cannot consume. You have to throw it out, right and then as a consumer you would like to have more and more shelf life and more and more stable product, right. So, that could be another parameter by which you can differentiate or detect the quality.

Then, witness for use as human food, right whether that particular food is fit for the human being to consume or not. Nowadays, if you go to different markets then you see there are many such this is for human consumption that is one side that is for some animals that is another side that is for some your pets that is another side, right.

So, that also should be definitely seen that the fitness of the product for consumption of the human being right whether the product developed or product being brought into the market is fit for consumption of the human being or not right something which may be very good otherwise, but it is appearance does not allow you to take it.

May be there are many such things which we come across, right, maybe it is appearance is very bad or it is not so good in looking or it may not have any appealing appearance then you will definitely would like to avoid no I can avoid this, right. So, that comes that fitness that how fit it is for the consumption of the human being right.

Then, wholesomeness: wholesomeness means you are taking a product right and that product say milk that is one of the best example milk you are taking right milk as though (I will come more in detail in subsequent classes) is said to be a almost complete food, but it is not a complete food there is reason for that.

So, as a whole when you are consuming a milk you can say the wholesomeness of the food that this is a food which if you consume will try to try to supplement as much you require or as much as far as nutrition or other things are required may be like that. Like like ice cream right that is also concentrated nutrient where you have where you have

both fat, protein, carbohydrates these things together right and not only fat, protein carbohydrates, but also you can add supplement fortify vitamins and all that is right.

Then it comes adulteration, right. You definitely do not like to have products which are adulterated, right. Everybody would like to have natural products, no artificial even if it be artificial, but there should not be any adulteration; means saying one thing and giving another thing that is adulteration. Whatever I declared whatever I say if the product does not incorporate with that constituent parts then we can say it is not as per with the defined or claimed substances, it is adulterated.

Milk is another very good example right. So, in most of the cases you have seen or you know you might have come across that milk the most adulteration or easiest adulteration is by adding water, right. In majority of the cases this is major problem of adulteration that the addition of water from and this water might not be potable water means drinking water.

So, because the people who are doing they may not may or may not come to know or may or may not be knowledgeable enough to decide whether water should be added water should be added means that particular water should be added or not. In obviously, this is with the intention of bad kind of I mean business or bad is social impact is very very otherwise, right, it is not good, but that is that can be considered adulterated.

Of course, nowadays milk is available were none of the milk material milk constituents are there, but still they are called to be milk or is being sold in terms of milk, right. So, that is where adulteration is coming in picture right and in many cases you will see that people are adding either stone or this or that may be with rice or dal or any other, right. So, they are then can be said to be adulterated not differently required as far as consumption or consumer is concerned, right.

Then, packaging; Nowadays, packaging industry has become so worst right packaging industry has become so worst that it is also coming under that not directly under the food quality because that is different food is inside packaging is outside of that food, but package nowadays packaging industry has become so developed that in many cases people are being I do not say being fooled or at least at least can be said that people are being mesmerized to the advertisement of the packaging, right. So, that packaging is also



an important parameter, but not directly related to the quality because it is not associated with the food quality.

But, that packaging material can in turn be a part of the quality determination of the food because if the packaging is not good that may inculcate some external contamination or some kind of humiliation with the with the unwanted things. So, these things are definitely part of the quality, but as such package itself is not. So, how far it is affecting on the quality that part is coming into the quality term of the food.

Then, in this the last parameter we can say labeling, right. So, this labeling is of course, important might or might not be direct or indirectly associated with the quality term of the food. Directly how? If labeling is saying that date of manufacture is so much and the expiry is so much then that should come under the labeling of product it should also contain that this product contains this in terms of in many products may be saying in terms of carbohydrate, in terms of fat, in terms of protein. In many products maybe they highlight maybe this part of the protein or this part of the cur fat or this part of the carbohydrate is used in the product.

So, labeling is also a must and that comes under the umbrella of quality because you are declaring the moment that labeling is there; that means, the producer is declaring and the consumer can obviously, take that either as a confirm thing or can also compare or can also verify whether the claim things are there or not right. So, as such all these parameter will tell about the quality of the food material. In the next class we will discuss some more of it. So, that in particular as you said that flavor texture, odour all this terms we can discuss little bit more, ok.

Thank you.