

The Availability, the Price, the Tradition, the Religion, the Income, the Social, the Development and the Economic Influences on the Meat Consumption

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ABSTRACT

The Muslims slaughtered AL-Odhia in Eid Al-Adha Almobark. The AL-Odhia includes the animal's sheep, goat, cattle, buffaloes and camel in Eid Al-Adha Almobark every year and the Muslims eat the meat of AL-Odhia. The Muslims do not eat the pork. The Muslims eat the meat all over the year. The Christians do not eat the meat and other foods of the animal origin in certain periods of the year. The Jewish not eat pork and camels' meat. Meat consumption is based largely on availability, price and tradition. The meat production is a very complex operation depending not only on the demand which is usually based up on the price and the income, but up on the many social and economic influences such as the official policy, the price support the mechanisms, and the interrelations such as the interaction between the beef and the milk production, the availability of the animal feedstuffs and the competition for the food between the man and the animals. It is difficult to make accurate comparisons of the meat consumption between the countries in the world because the different methods are used to estimate the consumption. The figures may be derived from the total supplies available at wholesale level, or from the records of the household purchases, with or without estimates of what is consumed away from the home; the estimate of waste, both in the preparation of the food and by the individual adds to the uncertainty. Some national estimates fail to include the imports, and some surveys include the weight of the non-meat components of the products, for example the amount of the meat in a product can range between hundred percentages in some types of the burger to ten percentages in some types of the pizza. The food Balance Sheets are prepared from the figures for the production, the imports, the stock changes, and the exports with allowances for the feed, the processing and "The other uses" and the same methods are applied to all the regions. The amount of meat consumed in different countries in the world varies enormously with social, economic and political influences, religious beliefs and geographical differences.

Keywords: The Muslims; The Christians; Meat Consumption; Religion; Diets; Development; Imports; Meat Production

Abbreviations: PUFA: Polyunsaturated Fatty Acids; MUFA: Monounsaturated Fatty Acids; SFA: Saturated Fatty Acids; VLDL: Very Low-Density Lipoproteins; HDL: High Density Lipoproteins; LDL: Low Density Lipoproteins; CHD: Coronary Heart Disease

Introduction

Up to a certain level of the income, the amount of the meat eaten varies with the income, in the relatively affluent the western world where the proportion of available income spent on the food has been steadily falling over the past generation, there is now a little if any difference between the amounts of the meat eaten by the different income groups. This contrasts with the Third World countries in the world [1-6]. The meat consumption is very large in the meat-produc-

ing areas such as Uruguay, Argentina, Australia and New Zealand, at three hundred grams per head per the day compared with an average of ten grams in India, Indonesia and Sri Lanka, the contrast between the total meat supplies in the developed and the developing countries in the world, allowing for the exports, the imports and the stock changes, and the production per capita in the former is five times as much as in the developing countries in the world. The relative size of the production of the different types of animals involved. The role of meat in the diet of the undeveloped and the developing countries in

the world. The meat is held in high esteem in the most communities. It has prestige value, it is often regarded as the central food round which the meals are planned, various types of the meat are sometimes made the basis of the festive and the celebratory occasions, and from the popular as well as the scientific point of view, it is regarded as a food of high nutritive value [7-12]. While meat is not essential in the diet, as witnessed by the large number of the vegetarians who have a nutritionally adequate diet, the inclusion of the animal products makes it easier to ensure a good diet.

The marked difference at the present time in the attitudes towards the meat between the people of the developing and the industrialized communities in the former where the meat is in short supply it can be taken as a measure of the nutritional quality of the diet. Where a typical diet is heavily dependent on one type of cereal or the root crop, the meat, even in the small amounts, the complements of the staple food. The meat provides a relatively rich source of the well absorbed iron and also improves the absorption of iron from the other foods, its amino acid composition complements that of the many plant foods, and it is a concentrated source of the B vitamins, including the vitamin B12 which is absent from the plant foods. The pressure to increase the availability of meat products [13-18].

The Social Effect on the Meat Consumption

In the industrialized countries in the world where the food of all kinds is plentiful and cheap there is concern, whether or not misplaced, about the potentially harmful effects of a high intake of the saturated fat from the animal foods, the emphasis on the continuous development of the regulations dealing with the hygiene in the abattoirs and during the subsequent handling, concern about the hormones administered to the cattle, what is the perceived as the excessive addition of the water to some processed products, the concerns that can scarcely be afforded in the developing countries in the world when the balanced against the food supplies. The increasing of the mechanization in the industrialized communities the steady fall in the human energy expenditure and the consequently in the per capita the food consumption poses a potential problem in the achieving an adequate intake of the nutrients even where there is an abundance of the food availability. The variety of the food available a diet of eight MJ (2000 kcal) or more per the day is likely to supply enough of all the nutrients, but when the intake is 6.5 to 7 MJ (1600-1800 kcal) per day the consumer needs to make an informed choice of the food to ensure an adequate intake of the nutrients. The Western Europe countries where the daily average energy intake of the women is about 6.5 MJ and that of the men eight MJ and there are reports of the biochemical signs of the deficiencies of the several B vitamins and the iron. It is not clear whether this is accompanied by the functional defects [19-25]. The industrialized countries in the world there have been slow but the continuous changes over the years in the relative amounts of the different types of meat consumed depending partly on the price and influenced by the fashion, the advertising, etc. During recent years the

health aspects, the more correctly, the perceived health aspects, have become a factor. The concerns about the public health in the industrialized countries in the world where the coronary heart disease and the other diseases of affluence are common have led to the recommendations to the public to modify their diet, the popularized as the dietary Guidelines. These particularly recommend a reduction in fat consumption, especially the saturated fatty acids and consequently, even if incorrectly, in the red meat. This has led in some sections of their populations to a relative increase in the consumption of poultry and the fish at the expense of the red meat. In addition there is concern, whether or not misplaced, about the presence in the meat of the pesticides, the residues of the hormones and the growth promoters used to increase the yields, and the concern about the human diseases thought to be transmitted by the beef, together with an increase, for the many reasons, in the vegetarianism [26-31].

The Meat as a Source of the Protein for the Human Protein Requirements

The human requirements for the protein have been thoroughly investigated over the years and are currently estimated to be fifty-five grams per the day for the adult man and fortyfive grams for the woman. There is a higher requirement in the various disease states and the conditions of stress. These amounts refer to the protein of what is termed the good quality and the highly digestible, otherwise the amount ingested must be increased proportionately to compensate for the lower quality and the lower digestibility [32-37].

The Protein Quality

The quality of a protein is a measure of its ability to satisfy the human requirements for amino acids. All the proteins, both the dietary and the tissue proteins, consist of two groups of amino acids - those that must be ingested ready-made, i.e. are essential in the diet, and those that can be synthesized in the body in adequate amounts from the essential amino acids. Eight of the twenty food amino acids are essential for adults and the ten for children. The quality of the dietary protein can be measured in various ways but basically it is the ratio of the available amino acids in the food, or the diet compared with the needs. In earlier literature this was expressed on a percentage scale but with the adoption of the S.I. system of nomenclature it is expressed as a ratio. Thus a ratio of 1.0 means that the amino acids available from the dietary proteins are in the exact proportions needed to satisfy the human needs; a ratio of 0.5 means that the amount of one of the essential amino acids present is only half of that required. If one essential amino acid is completely absent the protein quality would be zero. There is a popular impression, originating at one time from nutrition textbooks, that the qualities of the proteins from the animal sources are greatly superior to those from the plant sources. This is true only to the extent that many of the animal sources have the Net Protein Utilization, NPU, around 0.75 while that of many, but not all the plant foods are 0.5-0.6.

However, after infancy the people consume a wide variety of the proteins from the different foods and a shortfall in any essential amino acids in one food is usually made good, at least in part, by a relative surplus from another food, this is termed the complementation. As a result, the protein quality of the whole diets even in the developing countries in the world rarely falls below NPU of 0.7, a value that can be compared with the average of 0.8 in industrialized countries in the world. The value of the meat in this respect is that it is a relatively concentrated source of the protein, of the high quality, the highly digestible, about 0.95 compared with 0.8-0.9 for the many plant foods, and it supplies a relative surplus of one essential amino acid, the lysine which is in relatively short supply in the most cereals [38-44].

The Effect of Cooking on the Protein Quality

Apart from the inherent quality of the various proteins, a reduction in the quality takes place if there is damage to the amino acids when the food is cooked. At a temperature below 100°C when the proteins are coagulated, there is no change in the nutritional quality of the meat. The first changes take place when the food is heated to temperatures around 100°C in the presence of moisture and reducing the sugars, the present naturally or added to the food. There is a chemical reaction between the part of one essential amino acid, the lysine and a sugar to form a bond that cannot be broken during the digestion, and so the part of the lysine is rendered unavailable. When the proteins are analyzed to determine their amino acid composition the procedure involves a preliminary hydrolysis with the strong acid which does break the lysine sugar bond, so the chemical analysis does not reveal this type of the damage and the special methods are needed. At a higher temperature or with more prolonged heating, the lysine in the food protein can react with the other chemical groupings within the protein itself and more becomes unavailable. In addition, the Sulphur amino acids are rendered partly unavailable. The lysine-sugar reaction results in a brown-colored compound which produces an attractive flavour in the food and is the main cause of the color of the bread crust and the roast meat. While such severe heating reduces the amount of the lysine available in these foods the loss is nutritionally insignificant since it affects only a very small fraction of the total amount present. At the temperature needed to cook the meat there is little loss of the available lysine or the Sulphur amino acids but there can be some loss if the meat is heated together with the reducing substances, as may be present when the meat is canned with the addition of the starch-containing gravy or other ingredients. Overall the damage to the protein caused by cooking is of little practical significance and it can be argued that if there is meat in the diet it is likely that the quantity of the protein would compensate for any shortfall in the quality. The nutritional quality of the proteins of the meat rich in connective tissue is low since collagen and elastin are poor in the sulphur amino acids - there is only 0.8 g of each per 100 g of the total protein compared with values of 2.6 and 1.3 of each respectively in "The good meat. The meat is tough to eat when it is rich in the connective tissue and such meat is often used for the canning since the relatively high

temperature involved in the sterilization process partly hydrolyses the collagen so making the product more palatable. However, it still results in a product with NPU as low as 0.5 compared with a value of 0.75 - 0.8 for the good quality meat [45-51].

The Adequacy of the Dietary Protein

The protein requirement of an individual is defined as the lowest level of the protein intake that will balance the loss of the nitrogen from the body in the persons maintaining the energy balance at the modest levels of the physical activity. The "requirement" must allow for desirable rates of deposition of the protein during growth and pregnancy. When the energy intake is inadequate some of the dietary protein is diverted from the tissue synthesis to supply the energy for the general physical activity - this occurs at the times of the food shortage and also in the disease states where the food is incompletely absorbed and utilized. A diet adequate in the energy is almost always adequate in the protein - both in the quantity and the quality. For example, an adult needs an amount of the protein that is equivalent to 7 - 8% of the total energy intake, and since most cereals contain 8 - 12% protein even a diet composed entirely of the cereal would, if enough were available and could be consumed to satisfy the energy needs, satisfy the protein needs at the same time. The growing children and the pregnant and the nursing mothers have higher protein requirements as do the people suffering from the infections, the intestinal parasites and the conditions in which the protein catabolism is enhanced. During the stress that accompanies the fevers, the broken bones, the burns and other traumas there is considerable loss of the protein from the tissues which has to be restored during the convalescence and so the high intakes of the protein are needed at this time together with an adequate intake of the energy.

The digestibility of the proteins of various diets varies considerably. For example, the digestibility of the typical Western diets and the Chinese diets is 0.95. That of the Indian rice diet and the Brazilian mixed diet is 0.8. Digestibility is high in the diets that include the meat and low when the maize and the beans predominate. An increase in the amount of the protein eaten beyond the requirement the figures compensate for any shortfall in the digestibility and the protein quality [52-58].

The Meat as a Source of the Vitamins and the Minerals

The meat and the meat products are important sources of all the B-complex vitamins including the thiamin, the riboflavin, the niacin, the biotin, the vitamins B6 and B12, the pantothenic acid and the folic acid. The last two are especially abundant in the liver which, together with the certain other organs is rich in the vitamin A and supplies appreciable amounts of the vitamins D, E and K. The meat is an excellent source of some of the minerals, such as the iron, the copper, the zinc and the manganese, and play an important role in the prevention of the zinc deficiency, and particularly of the iron deficiency which is widespread [59-66].

4.6.1. The Meat Iron: The amount of the iron absorbed from the diet depends on a variety of factors including its the chemical form, the simultaneous presence of the other food ingredients that can enhance or inhibit the absorption, and the various physiological factors of the individual including his/her iron status. Overall, in setting Recommended Daily Intakes of nutrients the proportion of iron absorbed from a mixed diet is usually taken as ten percentage. Half of the iron in the meat is present as the hemoglobin. This is well absorbed, about fifteen to thirty five percentage, a figure that can be contrasted with the other forms of iron, such as that from the plant foods, at one to ten percentage. Not only is the iron of the meat well absorbed but it enhances the absorption of the iron from the other sources - e.g. the addition of the meat to a legume/cereal diet can double the amount of the iron absorbed and so contribute significantly to the prevention of the anemia, which is so widespread in the developing countries in the world. The Zinc is present in all tissues of the body and is a component of more than fifty enzymes in the body. The meat is the richest source of the zinc in the diet and supplies one third to one half of the total zinc intake of the meat-eaters. A dietary deficiency is uncommon but has been found in the adolescent boys in the Middle East eating a poor diet based largely on the unleavened bread. The public health concerns associated with the consumption of the meat [67-75].

The Coronary or the Ischaemic Heart Disease

A major cause of death in some parts of the industrialised world is coronary heart disease (CHD) and the saturated fatty acids have been implicated as an important dietary risk factor. Since about a quarter of the saturated fatty acids in the diet is supplied by the meat fat, the consumption of the meat itself has come under the fire. The first stage of development of the disease is a narrowing of the coronary arteries by deposition of a complex fatty mixture on the walls - a process termed atherosclerosis. The fatal stage is the formation of a blood clot that blocks the narrowed artery thrombosis. Even if the thrombosis is not fatal the reduced blood flow to the heart muscle deprives it of oxygen and can lead to extensive damage - myocardial infarction. Despite many years of intensive investigation the real cause of CHD is not known but a large number of what are termed risk factors have been identified, including a family history of CHD, smoking, lack of exercise, various types of stress and certain disease states together with a number of dietary factors. The saturated fatty acids, the myristic and the palmitic, have been established as the most important of the dietary risk factors in the coronary heart disease. There are three types of the lipoproteins in the blood; the low density lipoproteins (LDL) in which 46% of the molecule is the cholesterol; the high density lipoproteins (HDL) which include twenty percentage as cholesterol; and the very low density lipoproteins (VLDL) which have eight percentage cholesterol.

The high levels of the total blood cholesterol are associated with the incidence of CHD and the high intakes of the saturated fatty acids elevate the blood cholesterol levels: hence the association between

the dietary saturated fatty acids and the CHD. It is the LDL that appears to be the main problem and HDL appear to be protective. This lipid hypothesis of causation of CHD has led to the adoption in many countries in the world of dietary guidelines which, among other objectives, are intended to reduce the intake of the saturated fatty acids as compared with the unsaturated fatty acids and so reduce the blood levels of the LDL [76-82].

Types of the Fatty Acids

The Saturated Fatty Acids (SFA): Two of the saturated fatty acids, the myristic and the palmitic acids, appear to be the principal dietary factors that increase the blood cholesterol and do so by increasing the LDL. The other main SFA in the diet, the stearic acid, does not have the same effect apparently because it is converted to oleic acid which is monounsaturated; the fatty acids of the shorter chain length appear to have no effect. In order to explain the terms saturated and unsaturated fatty acids to the consumer, SFA have been equated with the animal fats so meat fat is perceived as being saturated, but, in fact, this is only relative. For example the pork lard is 40% SFA, the beef tallow is 43-50% SFA, depending on the part of the body from which it is derived. These figures can be compared with 20 - 25% SFA in the vegetable oils which are perceived as unsaturated. The lamb fat the proportion of SFA is about 40% or less. In four of the six samples of the meat listed there is a higher proportion of the monounsaturates than SFA. This perception of the meat fat as being saturated has led to the belief that meat, particularly the red meat, should be avoided. In fact it has been shown that a reduction of the total fat intake while still including in the diet 180 g of the lean meat containing 8.5% fat can result in a reduction in the blood cholesterol levels. The relation between the diet and the coronary heart disease is not only a subject of considerable misunderstanding in the minds of the consumers but also a subject of some controversy among the medical scientists [83-90].

The Monounsaturated Fatty Acids (MUFA): The fatty acid of main interest is oleic acid, the plentiful in the olive, the rape seed and the higholeic safflower oils. The relatively high intake of the olive oil and consequently the proportionately low intake of the SFA are believed to be important dietary factors in the low incidence of the CHD in the Mediterranean countries in the world compared with the northern Europe. It is not clear whether the oleic acid confers direct protection or simply replaces the SFA in the diet [91-98].

The Polyunsaturated Fatty Acids (PUFA): These are fatty acids with between 2 and 6 double bonds and long carbon chains of 18 to 22 carbon atoms. The Linoleic acid, 18 carbon atoms and 2 double bonds and the linolenic acid are plentiful in many vegetable oils. The very long chain fatty acids, the eicosatetraenoic and the docosapentaenoic are plentiful in the fish oils and smaller amounts are present in some meat fats. These very long chain the PUFA appear to offer direct protection against "the heart disease", particularly against the thrombosis, but it is not clear whether the other PUFA in the diet

,from the vegetable oils, offer protection or simply displace the SFA. Consequently it is often recommended that the vegetable oils, rich in the PUFA should not simply be added to a diet but should be used to replace other fats when there is a need for the fat in formulating the food products. The Linoleic and the linolenic acids are essential in the diet, they were at one time termed the vitamin F and the very long chain Fatty Acids is formed from them in the body. It is possible that the rate of their formation may not be adequate under all circumstances and so there may be benefit from consuming some of these very long chain PUFA ready-made in the diet [99-106].

The Trans Fatty Acids: The PUFA exist in nature in two structural forms, termed *cis* and *trans* forms. It is the *cis* forms that are used in the production of the fatty products such as special margarines. The other forms, *trans*, are formed when the oils are hydrogenated to make the hard fats for some margarines, and small amounts are found in the fats of the ruminants where they are formed by the bacterial hydrogenation in the rumen. The *trans* fatty acids have been shown to have an adverse effect on both the LDL and the HDL and so are considered potentially harmful. When calculating the ratio of the PUFA and the SFA in the diets, the *trans* fatty acids are often included with the SFA [107-111].

The Cholesterol: The Cholesterol is a fatty compound involved in the transport of the fat in the blood stream and is also part of the structure of the cell membranes of the tissues of the body. It is not a dietary essential since the adequate amounts are synthesized in the body from other dietary ingredients. The Confusion has arisen between the terms the blood cholesterol and the dietary cholesterol. For most individuals the dietary cholesterol has little or no effect on the blood cholesterol levels because reduced the synthesis in the body compensates for increased the dietary intake. However, there are individuals who are sensitive to the dietary cholesterol and most authorities advise a general reduction in the cholesterol intake for everyone. The meat supplies about one third of the dietary cholesterol in many western diets with the remainder from the eggs and the dairy products. Since all these foods are valuable sources of the nutrients there could be some nutritional risk in restricting their intake. In addition to playing an important role in the CHD dietary saturated fats have been implicated in the hypertension, the stroke, the diabetes and certain forms of the cancer, so all dietary guidelines include the recommendations to reduce the total fat intake and especially that of the saturated fats. The total fat should be reduced to 20-30% of the total energy intake, with not more than 10% from the saturated, 10-15% from the MUFA and with the PUFA at 3% or more; this results in a P/S ratio of 1.0. The reduction in the dietary cholesterol to around 300 mg or less per day [112-120].

The Poultry Meat Versus the Red Meat

The dietary guidelines sometimes include the advice to substitute, at least in part, the chicken for the red meat. The chicken meat including its skin contains about the same amount of the fat as does medi-

um-fat red meat, twenty percentages; it is important to remove the skin with the adhering subcutaneous fat, to reduce the fat content to around 5% - which is no lower than the figure for the lean meat. However, the chicken flesh has less saturated fatty acids and more PUFA, fourteen percentages than the lean meat with forty five percentage and four percentage, respectively. The duck flesh is very fat, containing about ten percentage fats - forty five percentages when the skin and the subcutaneous fat are included; only twenty seven percentage of the duck fat is saturated. The meat from the game birds, the grouse, the partridge, the pheasant and the pigeon, contains about five, seven, nine and thirteen percentage fat, respectively, of which about one quarter is saturated. Apart from the differences in the amounts and types of the fatty acids in the various kinds of the meat, the poultry and the game their nutrient compositions are similar [76-83].

The Toxic Compounds Formed During the Processing and the Cooking of the Meat

While the cooking is necessary to develop the desirable flavours in the meat the oxidation of the fats, especially at the frying temperatures, can give rise to the compounds that decompose to the aldehydes, the esters, the alcohols and the short chain carboxylic acids with the undesirable flavours. The meats are particularly susceptible because of the unsaturated lipids present which are more readily oxidised and because of catalysis by the haeme and the non-haeme iron. The more PUFA present the greater the likelihood of the oxidation, and the pork, the duck and the chicken are the most susceptible. Other types of the meat are less susceptible, e.g. the lamb, the turkey, and the beef. The adverse effect of these oxidation products on the eating quality is well recognized but more recently it has been suggested that some of them may be carcinogenic, and also may be involved in the ageing process and the CHD. However, it is possible or even likely that the unpleasant flavours would cause the rejection of the food at the levels below the harmful ranges. The cholesterol can also be oxidized and the oxidation product has been suggested as a possible factor in the CHD [84-92].

The Nitrosamines: the Nitrites, used in the curing salts can react with the amines commonly present in the food, to form the nitrosamines. These have been shown to be carcinogenic in all species of the animals examined but it is not clear, despite years of the intensive research, whether the amounts present in the cured meat affect the human beings. The problem is particularly difficult because the nitrosamines have been found in the human gastric juice, the possibly formed from the nitrites and the amines naturally present in the diet. As a precaution, the legally enforced in some countries in the world, there is a tendency to reduce the amount of the nitrite used in the curing mixture and to add the vitamin C which inhibits the formation of the nitrosamines [115-120]. The erythorbic acid and the tocopherol are also effective in reducing the nitrosamine formation. The problem is complex since the process of the curing is designed to prevent the growth of the *Clostridium botulinum* which is responsible for the bot-

ulism, and the risk of the botulism is increased if the concentration of the nitrate-nitrite is reduced too far. Moreover, the cigarettes contribute far greater amounts of the nitrosamines, up to one hundred times as much as the cured meat [93-101].

The Residues of the Drugs. The Pesticides: The residues of the drugs, the pesticides and the agricultural chemicals can be found in small amounts in the meat and the meat products. The pesticides, for example, may be applied specifically to the animals to control the insects or the intestinal parasites but may also be present in the meat as a result of exposure of the animals to the chemicals used on the buildings, the grazing areas and the crops. While there is no clear evidence that these small amounts cause harm to the consumer they are perceived as a risk. For this reason there is widespread legislation to the test for and the control a range of the chemical substances that may be present in the meat. The problem is complicated because the several hundred substances are used to treat the animals, to preserve the animal health and to improve the animal production [110-116]. These include the antimicrobial agents, the beta-adrenoreceptor blocking agents the anti-helminthic, the tranquillizers, the anti-coccidial agents, the vasodilators and the anesthetics. The potential safety problems arise from the possibility of the residues of these drugs and their metabolites remaining in the tissues consumed by the human beings. Some tranquillizers, for example, are used in the pigs in the immediate pre-slaughter period when there is no time for their removal through the normal metabolic processes. They can persist in the human body so that repeated intakes could possibly result in the accumulation of the drugs. In order to protect the consumers from such as risks, Practice for control of the use of the veterinary drugs. These provide guidelines for the prescription, the application, the distribution and the control of the drugs. Where there is sufficient scientific information available about the drug, the Acceptable Daily Intake as a measure of the amount of a veterinary drug, expressed on a body weight basis, that can be ingested over a life-time without appreciable health risk and the food additives [102-109].

Conclusion

The meat is not an essential part of the diet but without the animal products it is necessary to have some reasonable knowledge of the nutrition in order to select an adequate diet. Even the small quantities of the animal products supplement and complement a diet based on the plant food so that it is nutritionally adequate, whether or not there is informed selection of the food. The Side by side with these known benefits of including the meat and the meat products in the diet are problems associated with the excessive intakes of the saturated fats, the risks of the food poisoning from the improperly processed products, the residues of the chemicals used in the agriculture and the animal production and other potentially adverse aspects. Within these concepts is the major problem of the meat production under the conditions that used to avoid the food poisoning and satisfy the economic demands of the profitability with the traditional, the cul-

tural and the religious concerns of the community. There is a steadily increasing demand for the meat in the developing countries in the world which can be satisfied by increased the domestic consumption and the increased imports. It is thought that the major increase in the domestic production will come from the small producers rather than from creating the large production units but these lack the essential facilities for producing the safe and wholesome products. If there is to be a significant increase in the meat production it will require clear policy decisions with the necessary financial, the legislative and the technical support. There is considerable potential for the increased supplies through the better management, selection of the animals, the avoidance of the waste and making use of the indigenous species. If the exports are to be considered then the attention has to be paid to the strict hygienic and the safety requirements involved, whatever the domestic market might tolerate.

Conflicts of Interest

The author declare no conflicts of interest.

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