Review Paper

Meat-eating: The Second Main Culprit of Climate Change

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ABSTRACT

Background: Due to the greenhouse gases emission caused by human activities there is wide agreement about global warming. Methane is one of the most dangerous greenhouse gases in the global warming process which is produced through human activities and natural processes. In addition, the use of fertilizers and chemical pesticides would produce nitrogen monoxide in the atmosphere. This gas is another greenhouse gas that takes its toll on global warming.

Materials and Methods: In this study, we reviewed articles published between the years (2005-2022). Scientific resources were searched in both Persian and English using the keywords (meat-eating, climate change, cattle, pig, and food) in the databases (Magiran), Pubmed, Scopus, and Google Scholar.

Results: Population growth, economic development, and urban migration have stimulated unprecedented demand for animal protein such as meat and dairy products so that livestock in the traditional way no longer met this need of man for protein. About two to three billion cows and pigs are slaughtered annually resulting in a very high methane emission in nature that accelerates global warming.

Conclusion: Shifting towards plant-rich diets and embracing alternative sources of protein could be helpful.

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1. Introduction

Climate change and its effects have always been one of the major concerns of humanity and it is considered one of the serious problems against sustainable development around the world. There is some evidence that we are in a period of global warming which has been created by human behavior in its most pessimistic and exacerbated way [1].

Currently, there is wide agreement about global warming, due to the greenhouse gases emission caused by human activities. It is also clear that the current trend in energy use, development, and population growth will lead to the continuation and intensification of climate change. There is also ample evidence that the situation will worsen considerably if we do not take very effective and serious actions to reduce the pressures of human intervention in the environment. Some of these predictions include intensifying drought in arid areas, global water and food shortages, increasing global hunger and food insecurity, and unpredictable climate patterns [2]. While all changes associated with the climate change process are not predictable, our today's actions to shape the environment will certainly help us in the upcoming decades. The increase of greenhouse gases in the atmosphere leads to an additional warming of the earth. Currently, the current concentration of greenhouse gases in the atmosphere had been at the highest level in the last 500 years and has grown by 70% between 1970 and 2004 alone. It is now strongly accepted that human activities are the dominant factor of this growth which has been responsible for global warming over the past 50 years [3].

Mass production of meat has destroyed the environment due to many factors, including the widespread use of antibiotics, feeding, and mass reproduction in confined spaces, and the increasing use of pesticides for the mass production of plants used to feed meat animals. However, the consumption of meat and dairy products in modern societies has become so commonplace that it seems normal [4].

Meat production is inseparably involved in both climate change and increasing food insecurity, which is due to the high demand that it brings to the natural environment [5]. Methane is one of the most dangerous greenhouse gases in the global warming process which is produced through human activities and natural processes even though its lifetime in the atmosphere is short relative to carbon dioxide. In fact, on industrial farms, animals do not graze in the meadows [6]. For them to be as productive as possible in terms of milk, meat, and egg production in the shortest possible time, they are fed soybeans and grains (usually corn). To produce these crops, which are usually genetically modified, fertilizers and chemical pesticides are used which produce nitrogen monoxide in the atmosphere. This gas is another greenhouse gas that has a more destructive effect than methane. The gas in the atmosphere is 200 times that of carbon dioxide [7].

In 2006, the Food and Agriculture Organization (FAO) of the United Nations declared that farms were responsible for producing of 18% of all man-made greenhouse gases. In other words, the role of livestock in global warming and the role of transportation (total land, sea, and air transportation), which is responsible for 13% of greenhouse gas emissions, is greater. The role of livestock farms is much worse than what the FAO has stated, the agency said livestock farms are responsible for producing 51% of greenhouse gases produced by humans [8].

2. Materials and Methods

In this study, we reviewed articles published between 2005-2022. Scientific sources were searched in both Persian and English using Quid keywords. Scientific resources were searched in both Persian and English using the keywords (meat-eating, climate change, cattle, pig, and food) in the databases (Magiran), Pubmed, Scopus, and Google Scholar. A total of 206 articles were found, of which 10 were reviewed. The inclusion criteria included originality, writing in Persian and English, and compliance with the purpose of the study, and exclusion criteria included not having access to the full version of the article.

3. Results

Population growth, economic development, and urban migration have stimulated unprecedented demand for animal protein such as meat and dairy products increases so that livestock in the traditional way no longer meet this need. So, the world has moved to breed animals such as cattle and pigs in the form of industrial livestock, and over time their number has increased [9].

Annually, about 2 to 3 billion cows and pigs are slaughtered for human consumption. When these animals are killed, the number of animals raised will definitely multiply. As a result, the emission of methane gas increases in nature and accelerates global warming [10].

4. Conclusion

The solution is to encourage people to remove animal protein from their diet at least one or two days a week and shift towards plant-rich diets and embrace alternative sources of protein to slash greenhouse gas emissions and limit global warming. In addition, farmers can provide animals with more nutritious feed so that they are larger, healthier, and more productive.

Ethical Considerations

Compliance with ethical guidelines

There were no ethical considerations to be considered in this research.

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Authors' contributions

Study design, data analysis: Ameneh Marzban and Shandiz Moslehi; Data collection: Payam Emami; Drafting the manuscript: All authors.

Conflict of interest

The authors declared no conflict of interest.

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