OPINION

Different processing methods of Lentils

Carrie Smith

Carrie S. Different processing methods of Lentils. J Food Drug Res. 2022; 6(2):17-19.

ABSTRACT

Lentils are one of the oldest human-cultivated crops, having been domesticated in the Fertile Crescent of the Middle East circa 8000 BC. Since then, they've been in steady use in various communities, and their use is widespread in both developed and developing countries. India, Canada, Turkey, the United States, Nepal, Australia, Syria, China, Bangladesh, and Iran are the top lentil-producing countries. Lentil is a key rotation crop in cereal-based farming systems in the Pacific Northwest of the United States. Lentil production in the United States was first focused in eastern Washington and northern Idaho.

Key Words: *Lentils; Trypsin inhibitors; Food and Agriculture Organization; Polymerization*

INTRODUCTION

Lentil production has spread to neighboring northern states such as Montana and North Dakota. In recent years, the United States' production area has grown dramatically. Lentils are typically sold whole or divided in cans or dry packages for retail sale, or processed into flour. Soups, stews, salads, snack foods, and vegetarian dishes all contain them. Because of their high protein content and good quality, lentils can be used as a meat extender or alternative. Lentil flour is gluten-free and can be used together with cereal flour to produce bread, cakes, and baby foods. Lentils offer a number of possible health-promoting properties, including lowering cholesterol, regulating blood sugar issues, lowering blood lipids (9), and lowering the risk of cardiovascular disease and cancer [1]. Lentils, as a pulse crop, are a vital component of tropical agriculture, providing a nutrient-dense and protein-rich diet. Lentils are one of the best and cheapest sources of vegetable protein, with 25 percent protein, 56 percent carbohydrate, and 1.0 percent fat in the seeds. Lentils are one of the most nutritious pulses, although they include a number of antinutritional elements that may limit their usage. Trypsin inhibitors (TI) are among these, as they impede the proteolytic activity of the digestive enzyme trypsin, resulting in reduced amino acid availability and growth. Lentils have been found to have a significant amount of condensed tannins. They can react with lysine or methionine to cross-link with protein, rendering them indigestible. However, the degree of polymerization of these polyphenolic chemicals has a significant impact on both protein digestibility and vitamin and mineral availability. Phytate concentration in beans has been linked to reduced mineral bioavailability and the inhibition of numerous enzymes [2]. According to a 2014 report by the Food and Agriculture Organization, the world's lentil output was predominantly cultivated and harvested by Canada and India, with 1.99 million and 1.1 million metric tonnes respectively, followed by Turkey (0.34 million), Nepal (0.22 million), and China (0.125 million). The research showed that eating lentils is linked to a lower risk of degenerative diseases like diabetes, cardiovascular disease (CVD), and cancer. Because of their high nutritional contents, nutritive value, and availability of bioactive secondary metabolites, scientists are increasingly interested in studying lentils as a functional food. Lentils include bioactive chemicals that are important in the prevention of degenerative diseases in humans as well as in boosting health. The current thorough review, which is based on exploratory studies, intends to give information on the nutritional contents, bioactive components, and health-promoting effects of polyphenol-rich lentils, as well as examine their therapeutic usefulness for future clinical trials [3]. Leguminous seeds have recently been utilized successfully in the nutritional therapy of diabetes. These foods are particularly high in dietary fibre and enzyme inhibitors. Certain forms of dietary fibre and enzyme inhibitors have been demonstrated to improve diabetes management and flatten postprandial glycaemia in normal and diabetic participants when introduced into the diet. However, the causes causing the glycemic response disparities observed between beans and other carbohydrate meals remain unknown [4].

Editorial Office, Journal of Food and Drug Research, Windsor Berkshire, UK

Correspondence: Carrie Smith, Editorial Office, Journal of Food and Drug Research, 35 Ruddlesway, Windsor Berkshire, UK, E-mail puljfdr@pulsuspublishers.com

Received: 28-Feb-2022, Manuscript No. PULJFDR-22-4543; Editor assigned: 03-Mar-2022, PreQC No. PULJFDR-22-4543(PQ); Reviewed: 12-Mar-2022, QC No. PULJFDR-22-4543(Q); Revised: 14-Mar-2022, Manuscript No. PULJFDR-22-454 (R); Published: 22-Mar-2022, DOI: 10.37532/puljfdr.22.6(2).17-19

There are few foods that have a nutritional profile as diverse as dried beans and peas. Dry beans and peas are high in protein, fibre, and a variety of vitamins and minerals. Although they are a common food source in many civilizations throughout the world, consumption in the United States has been estimated to be low, with only 14% of the population consuming dry beans over a two-day period in 1994-1996. Adults consume 0.1 to 0.3 servings of legumes per day on average, according to data from the National Health and Nutrition Examination Survey (NHANES) 1999-2000, which is one-third or less than the recommended amount. Dry beans such as pinto and kidney beans, split peas, chickpeas, lentils, and soybeans are examples of legumes. There has been a lot of research done on legume eating and its health advantages. Dry bean consumption has been linked to a reduced risk of cardiovascular disease, breast, colon, and other malignancies, and diabetes, which is likely due to the synergistic action of nutritive and non-nutritive components in dry beans. Dry beans' protein, fibre, and folate have all been found to play a role in the prevention of heart disease and perhaps some malignancies. Because of their high fibre and resistant starch content, dry beans have a lower glycemic response than other high-carbohydrate–containing meals, which may be a factor in the prevention or treatment of diabetes (16) and colon cancer. Phytates, saponins, and oligosaccharides, which are non-nutritive phytochemicals, may also play a role in cancer prevention. Furthermore, in one study, legume consumption was found to be a major predictor of overall survival among the elderly in five cohorts: Japanese, Swedes, Greeks, Australian Anglo-Celtics, and Australian Greeks [5]. Legumes are high-protein crops that have long been a part of the human diet. They also contain a lot of carbs, dietary fibre, and water-soluble vitamins and minerals. Pulses, on the other hand, include antinutritional substances such as trypsin inhibitors, -galactosides, and phytic acid, which can reduce their nutritional value, which is why legume seeds must be treated before eating. Germination has been proposed as an inexpensive and effective technology for improving the quality of legumes by increasing their nutritional value, and germinated soybeans account for a significant portion of total food legume consumption in China, India, Burma, and Indonesia [2], and are becoming increasingly popular in western countries. Soaking the legume seeds in water is usually done before they germinate. During germination, some of the seeds' reserve components are destroyed and used partly for respiration and partly for the synthesis of new cell elements of the developing embryo, resulting in significant changes in the biochemical, nutritional, and sensory aspects of legumes. Fats and carbs, which are generally overabundant in western diets, are broken down, and starch digestibility improves. During germination, vitamins and secondary chemicals, many of which are helpful as antioxidants, can alter dramatically. During germination, the in vitro digestibility of proteins rises, as does the emulsifying capacity of legume proteins [6].

Food legumes are becoming increasingly important in sustainable agriculture and food security around the world. Food legume cultivation has significant environmental and economic benefits due to their ability to fix nitrogen and hence replace synthetic fertilizers, reducing greenhouse gas emissions. Seeds of grain legumes are widely used as staple sources of dietary proteins, in contrast to animal-based protein, which has a high environmental cost. They give prospects for expanded utilization in innovative plant-based protein meals and animal feeds, as they are the primary source of dietary protein for over one billion people. Protein contributes to the nutritional value, handling properties, and gustatory qualities of foods. Cultivated lentil (Lens culinaris Medik.) is a quick-cooking and nutritious staple legume farmed in more than 70 countries and consumed in whole, deshelled, and split from around the world. It has lens-shaped seeds with a variety of seed coat colors. The cotyledons come in a variety of colours, including yellow, red, and green. Many portions of the Indian subcontinent and the eastern Mediterranean consume red cotyledon lentils in deshelled form as split cotyledons, which are a good source of protein and nutrients. Red and green lentils are the two most common commercial market classifications. Large green lentils (with yellow cotyledon) are generally consumed as entire seeds in Europe, the Middle East, and parts of South America [7]. The genus Lens has five species according to traditional taxonomy: L. montbretii (Fisch. & Mey.) Davis & Plitman, L. ewoides (Brign.) Grande, L. nigricans (M. Bieb) Godron, L. orientulis Orientulis orientulis orientulis orientulis orientulis orientulis orientulis orientulis orientulis orientulis orientulis orientulis orientulis (Boiss). Medikus, Handel-Mazzeti, and L. culinaris Recent morphological and cytological data, as well as evidence from breeding studies. This taxon is distinguished from other Lens species by its villose leaves and pods, a large number of leaflets per leaf, long branching tendrils, and larger pods than any other Lens species. Classic taxonomy does not always describe biological things because it is based on physical traits. Hybridization within the genus suggests that morphological species delimitation is a bit hazy. Crossincompatibility can occur between accessions that are categorised in the same species based on their morphology. As a result, L. odemensis, which was previously classified as a subspecies of L. nigricans, was classified as a separate species [8].

Simple and economical processing techniques are widely regarded as a successful method of making desired changes in the composition of seeds by removing undesired components, which is necessary to increase the nutritional content of legumes and fully maximize their potential as human food. In this way, processing techniques may be able to boost the nutritional content of lentils for both animal and human use.

Treatment with heat Simple and economical processing techniques are widely regarded as a successful method of making desired changes in the composition of seeds by removing undesired components, which is necessary to increase the nutritional content of legumes and fully maximise their potential as human food. In this way, processing techniques may be able to boost the nutritional content of lentils for both animal and human use [9]. Pulses, on the other hand, include anti-nutritional components such trypsin inhibitors, phytic acid, tannins, and oligosaccharides, which may impair their protein and carbohydrate utilization. Low molecular weight proteins called trypsin inhibitors attach to and inactivate the digesting enzyme trypsin. Mineral bioavailability is reduced by phytic acid, and flatulence is caused by oligosaccharides. Tannins are known to produce protein complexes, which are thought to be the cause of reduced protein digestibility and amino acid availability [10].

REFERENCES

1. Xu B, Chang SK. Phenolic substance characterization and chemical and cell-based antioxidant activities of 11 lentils grown in the Northern United States. J Agric

Food Chem. 2010;58(3):1509-17.

2. Vidal-Valverde C, Frias J, Estrella I, et al. Effect of processing on some antinutritional factors of lentils. J Agric Food Chem. 1994;42(10):2291-2295.
3. Ganesan K, Xu B. Polyphenol-rich lentils and their health promoting effects. Int J Mol Sci. 2017;18(11):2390.
4. Jenkins DJ, Thorne MJ, Camelon K, et al. Effect of processing on digestibility and the blood glucose response: a study of lentils. Am J Clin Nutr. 1982;36(6):1093-1101.
5. Mitchell DC, Lawrence FR, Hartman TJ, et al. Consumption of dry beans, peas, and lentils could improve diet quality in the US population. J Am Diet Assoc. 2009;109(5):909-913.
6. Urbano G, Lopez-Jurado M, Hernandez J, et al. Nutritional assessment of raw, heated, and germinated lentils. J Agric Food Chem. 1995;43(7):1871-7.
7. Khazaei H, Subedi M, Nickerson M, et al. Seed protein of lentils: Current status, progress, and food applications. Foods. 2019;8(9):391.
8. Ladizinsky G, Muehlbauer FJ. Wild lentils. Crit Rev Plant Sci. 1993;12(3):169-84.
9. Urbano G, Lopez-Jurado M, Hernandez J, et al. Nutritional assessment of raw, heated, and germinated lentils. J Agric Food Chem. 1995;43(7):1871-7.
10. Wang N, Hatcher DW, Toews R, et al. Influence of cooking and dehulling on nutritional composition of several varieties of lentils (Lens culinaris). LWT-Food Sci. Technol. 2009;42(4):842-8.