Chakkaravarthi et al. (1993) concluded that the moisture content of the flax seed dried grits had a significant effect on the grinding energy, which increased as moisture content increased from 10 to 15% and decreased as moisture content rose to 18% and, again, increased as moisture content rose to higher values. The moisture content of 18%, therefore, was recommended for grinding operations, as it requires the least grinding energy.

Hutchings (1999) reported that increased pigment stability in food colour can be obtained in products that are of low water activity. Light, metal ions, gamma and ultraviolet radiation also cause degradation of the pigments. A betanin concentration of 33 ppm gives marshmallow a strawberry colour, but 80 ppm is needed for a cherry colour. Similarly, of 16 ppm in a fondant gives a strawberry colour, 32 ppm required for raspberry.

Kidmose and Martens (1999) indicates that microwave-blanching method leads to a heterogenic cell structure of carrot. This method of blanching confirms higher content of dry-matter, carotene, and sucrose in carrots.

Robertson et al. (1999) said that two hundred grams of raw carrot eaten at breakfast each for 3 weeks, significantly reduced serum cholesterol by 11 percent, increased fecal bile acid and fat excretion by 50 percent and modestly increased stool weight by 25 percent. This suggests an associated change in bacterial flora or metabolism.

Vora et al. (1999) demonstrates that pectin esterase should be the indicator enzyme in the assessment of blanching sufficiency for processing of carrots.
Conners (2000) some evidence suggests EPA can elongate further to docosahexanoic acid (DHA), an omega-3 fatty acid that is essential for cell membrane integrity, as well as brain and eye health.

Giese (2000) stated that Blanching is generally used to process vegetables to inactivate enzymes. This is not a method of preservation but it is considered as pre-treatment for raw vegetables prior to other processing. It is also combined with peeling and/or cleaning of vegetables. Blanching brightens the color by removing air and dust on the surface in some raw vegetables and thus altering the wavelength of reflected light. Time and temperature of blanching influence on food pigments.

Oliver et al. (2000) analyze of carotenoids is complicated because of the diversity and the presence of cis–trans isomeric forms of this group of compounds. In addition, a wide variety of food products of vegetal and animal origin, vegetables and animal samples contain carotenoids, and a great range of carotenoids can be found in these samples. The characteristic conjugated double bond system of carotenoids produces the main problem associated with work and manipulation on carotenoids, that is their particular instability, especially towards light, heat, oxygen and acids. For this reason, several precautions are necessary when handling carotenoids. Another problem associated with analysis of carotenoids is the difficulty in obtaining standard compounds. High-performance liquid chromatographic methods for the determination of carotenoids in foods are reviewed. The sample extraction and treatment, carotenoid purification and standard manipulation are briefly commented on. We present a critical assessment of chromatographic methods developed for the determination of carotenoids in foods.

Canadian Grain Commission, (2001). Limited data are available regarding proximate (nutritive) analysis of flax. Values most commonly used are 41 percent oil, 20 percent protein and 28 percent dietary fiber.

Roy et al. (2001) indicated that blanching and freezing conditions affect on firmness retention and ultra structural changes in the cell wall and middle lamella of carrot tissues.
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High temperature sort time blanching (HTST) (100° C, 0.58 minutes; 2.12 minutes) maintains firmer carrot texture than the low temperature long time blanching (LTLT) (80° C 11.64 min; 70 V , 71.1 minutes) method.

**Szczesniak Alina Surmacka** (2001) reported that the components of complex textural characteristics, developing an understanding of the perceptual interplay among texture parameters and between textural and other (e.g. visual clues, taste) modalities, exploring the breakdown pathways in the mouth for various food categories, and repeating earlier studies on consumer attitudes and preferences in the context of 21st century cultures and lifestyles.

**Banga and Bawa** (2002) concluded that the dehydration ratio was more for blanching samples than the unblanched ones dehydrated at 60° C to 70° C. But blanching not found to beneficial treatment for grated carrots. The unblanched dried samples were used in various formulation such as carrot kheer, halwa and shows better result.

**Marathe et. al** (2002) investigated that The effect of low-dose gamma irradiation (0.25–1.00 kGy) on pre-packed whole-wheat flour (atta) was assessed in terms of physico-chemical properties, nutritional quality, chapati-making quality and sensory attributes. Semi-pilot scale storage studies on irradiated pre-packed whole-wheat flour revealed that there was no adverse effect of irradiation and storage up to 6 months of whole-wheat flour treated at doses up to 1.00 kGy on total proteins, fat, carbohydrates, vitamin B₁ and B₂ content, colour index, sedimentation value, dough properties, total bacterial and mould count. Storage of wheat flour resulted in slight increase in moisture, free fatty acids, damaged starch, reducing sugars and slight decrease in gelatinization viscosity. However, irradiation as such had no effect on any of these parameters. Irradiation at 0.25 kGy was sufficient to extend the shelf-life of atta up to 6 months without any significant change in the nutritional, functional attributes. Chapaties made from irradiated atta (0.25 kGy) were preferred even after 6 months storage, compared with the control.
Rao et al. (2002) studied the effect of combination drying on the physico-chemical characteristics of carrot and pumpkin and found that the drying time and total energy for combination drying was 50 percent less than freezing drying but similar to hot air drying. The combination of dehydration process was effective in obtaining high quality dehydrated vegetables.

Sousa et. al (2002) reported that contamination during handling, inadequate or nonexistent sanitation, contaminated raw vegetables, long food storage, high indoors temperature and humidity or a combination of these factors was involved. This may indicated a deficiency in management training, resulting in less stringent food hygiene procedures and a lower standard of microbiological quality of the foods provided.

Suman and kumari (2002) studied that developed products from dehydrated carrot such as carrot curry and carrot biscuits from carrot chops, shred and powder. Carrot halwa and biscuits were accepted well as compared to carrot curry. They concluded that these dehydrated products can be stored for 3 months and among the products of carrot powder had higher beta-carotene retention (68 percent) during storage.

Daun et al. (2003) Similar to most grains and oilseeds, the composition of flax seed can vary based on variety, environmental factors and method of analysis.

Kumbhar et al. (2003) developed carrot halwa and studied the effects of milk to carrot ratio, sugar, sodium metabisulphate and temperature on quality of dehydrated halwa. Result showed that the rehydration ratio decreased with an increase in milk to carrot ratio, sugar and sodium metabisulphate. A these variables decreased sensory response. Interaction between milk to carrot ratio, sugar and sodium metabisulphate and temperature however increased with sensory response.

Manjunatha et al. (2003) developed kheer mix based on dehydrated carrot; skimmed milk powder; sugar and other ingredients which remained acceptable upto 9 month at 25°
– 30°C and 37°C temperature in paper aluminum foil and poly propylene laminate products.

Singh et al. (2003) developed products such as jam, biscuits and cake from fresh and dehydrated carrot; their nutritional quality was evaluated and it was found that these products contained appreciable amount of protein, iron and beta-carotene and other nutrients in order to combat iron and Vitamin A deficiencies.

Baloeden et al. (2004) reported that high dietary fibre in flax seed, due to high water holding capacity and low digestibility increasing the bulkiness and gastric empting of stool this in helps relieve constipation and other irritable bowel syndrome.

Hashimoto (2004) stated that carrot also posses quite a few medicinal properties, it has been reported to have diuretic and nitrogen blanching properties as well as being effective in elimination of uric acid.

Hussain (2004) conducted that in which he has found significant improvement in the proximate composition (ash, fat, protein and fiber) of full fat flaxseed flour supplemented with whole wheat flour.

Izabela et. al (2004) reported that Carrot seed oil is the source of the carotane sesquiterpenes carotol, daucol and caryophyllene. These sesquiterpenic allelochemicals were evaluated against Alternaria alternata isolated from the surface of carrot seeds cultivar Perfekcja, a variety widely distributed in horticultural practise in Poland. Alternaria alternata is one of the most popular phytotoxic fungi infesting the carrot plant. The strongest antifungal activity was observed for the main constituent of carrot seed oil, carotol, which inhibited the radial growth of fungi by 65 percent at the following concentration.

Kowasleya and Vidhya (2004) studied the effect of dehydration on nutritive value of vegetables and conclude the dehydration techniques resulted in concentration of nutrients
(3 or 5 fold) especially micronutrients. The Protein, Fat, Total Ash and Crude fibre content not altered much. Dehydration and rehydration had a quality for minimum effect on mineral content.

Lee (2004) showed that the combination of preservation factors can have unexpected antimicrobial activity. Therefore, this article includes an overall review of the microbial safety of fruits and vegetables, preservative method including major preservative factors used in pickling technology, concept and mechanism of hurdle technology and *E. coli*.

Putnam and Jane (2004) concluded that carrot in other forms are more nutritious because raw carrots have tough cellular walls, the body is able to convert less than 25 percent of their Beta carotene into Vitamin A.

Sharma et al. (2004) stated that value added foods offer a variety of foods, may form of traditional conventional foods, conveniences foods, ready to eat and serve foods, enriched in fortified foods, neutraceuticals, heath drinks, each of them offering a good amount of nutrients.

Thompson et al. (2004) examined in a randomized double-blind placebo-controlled clinical trial, the effects of dietary flax seed on tumor biological markers and urinary lignan excretion in postmenopausal patients with newly diagnosed breast cancer. Resulted that Dietary flaxseed has the potential to reduce tumor growth in patients with breast cancer.

Tung (2005) reported that Vitamin A and beta- carotene were modestly protective against ovarian cancer in smokers.

Ashraf et al. (2005) observed a continuous increase in physiological loss in weight of fruit during storage. Ascorbic acid content registered a gradual decline with the advancement in the storage period.
Bodyfelt *et al.* (2005) reported that the scoring is a more frequently used method of sensory testing of food quality. One cup of cooked lotus stem contains only 79 calories. The stem is very fiberous, crunchy and can have a bit of milky mucilage when it is really fresh. Lotus stem is regarded as an effective food to maintain the elasticity of the facial skin.

Dahl *et al.* (2005) reported that a flax seed fiber supplement provides the benefits of soluble and insoluble fiber.

Goss *et al.* (2005) reported that dietary flax seed has the potential to reduce tumor growth in patients with breast cancer.

Ku-lee *et al.* (2005) reported that lotus leaves are known for their refrigerate astringent and diuretic actions. This led to diverse applications such as using the lotus leaves for diarrhoea, high fever, haemorrhoids and leprosy. Koreans prepare traditional liquor (lotus loquore) from the bosses and lotus leaves that have been found to have antioxidant activities useful for reducing oxidative stress and the risk of chronic disease.

Mozaffarian (2005) suggested that Dietary á-linolenic acid has been assessed for its role in cardiovascular health. Clinical benefits have been concluded that modest dietary consumption of linolenic acid (2 to 3 g per day) will help in the primary and secondary prevention of coronary heart disease.

Singh *et al.* (2005) reported that drying and dehydration of vegetables in perhaps the most economical easiest method. There is minimum level of moisture for the acidity of spoilage organism and the moisture content must be reduced considerably so that the micro organism either remains dormant or perish. Further reduction of moisture in certain type of foods is sometime necessary to avoid other undesirable changes during storage. Dehydration has certain more advantages over other methods of storage.
Stevenson et al. (2005) reported that root vegetables are rich source of carbohydrate, a good source of protein and have high level of important vitamins, minerals, and micronutrients, these are good source of dietary fibre, having practically low cholesterol. This makes root vegetables relatively low in calories.

Tarpila et. al (2005) stated that the flax seed diet has been beneficial on prostate cancer and benign prostate hyperplasia when defined by cell proliferation indexes and other cancer biomarkers. Alpha-linolenic acid seems to have an antiproliferative effect on prostate cancer cells. Elevated serum enterolactone level associates with a lower incidence of acute coronary heart disease. Respectively, low serum enterolactone enhances the risk for coronary deaths. Alpha-linolenic acid has been shown to be protective against cerebrovascular stroke and atherogenic carotid plaque formation.

Alexis (2006) reported that carrots do gives eyes a boost because they contain beta carotene, which the body is able to convert into Vitamin A, an essential vitamin or healthy vision.

Amrithaveni et al. (2006) reported that the administration of 5 percent of processed Flax powder in the form of bread leads to significant reduction that the use of flax seed powder has immense therapeutic potential on type 2 diabetes when given for a period of three months.

Castenmiller (2006) reported that bioavailability of beta carotene in raw carrots was 26 percent of that of beta carotene in oil. However, in carrot juice, in which the structure of the carrot was destroyed, the bioavailability was nearly twice as high, 45 percent.

Brojck et al. (2006) studied the possibility of improving blood lipids, glucose tolerance insulin sensitivity in women with impaired glucose tolerance and history of gestational diabetes by merely changing the glycemic index (41) and dietary fibre content their bread. They concluded that a combination of low glycemic index and a high content of cereal dietary fibre have a beneficial effect on insulin economy in women at risk of developing type 2 diabetes.
Bedi et al. (2006) observed that lotus root had the highest iron content of 60.0mg /100g whereas lowest content was observed in sweet potato (2.8mg/100).

Bi et al. (2006) stated that lotus seeds are rich in compounds such as alkaloids (demethylcolaurine, isoliensinine , liensinine lotusine, methylocrpalline, neferine nuciferine and pronuciferine flavoinds (galuteoline , hyperine , rutin ) and some microelements (zn, fe,ca, and Mg).

Bahadur et al. (2006) studied on dehydrated carrot cubes. Osmotically preheated with aqueous sodium chloride (10 %, w/v), sucrose syrup (55 0Brix), and mixture of sucrose and sodium choride (50 0brix + 10 %, w/v), at 65°C temperature up to final moisture content of 4-5 (wet basis).

Chakraborty et al. (2006) stated that India is the second largest producer of vegetables in the world with a total production of 88.6 million tons from an area of 6.2 hectare with a productivity of 14.4 tons per hectare. Most of the vegetable are a cheaper source of nutrients such as vitamins and minerals.

Conforti et al. (2006) evaluated the effect of soya flour in preventing the development of lipid rancidity in the stored soya/flax bread. Bread volume decreased with increased addition of grains (flax and soya flour). Firming of the crumb was observed with increased percentage of soya flour. There were no significant differences in moisture in the flax and soya/flax breads. Darker crusts were developed in the control and soya/flax breads, while a darker crumb was found in flax and soya/flax breads. A 10% substitution level of soya flour did not have a significant effect on inhibiting lipid rancidity, but a lower peroxide value was produced in the bread. A 10% level of soya flour substitution also produced bread with lower quality sensory scores.
Hussain et al. (2006) observed that full fat flaxseed flour was supplemented with wheat flour @ 5, 10, 15, 20, 25 and 30%. Cookies were prepared from composite flours. Cookies prepared without flaxseed flour were kept as control. The mean quality score of the cookies decreased with the increase in the level of the flaxseed flour supplementation. Colour and crispiness of the cookies showed a declining trend as compared to flavour and texture of cookies. Cookies containing 20% and lower level of the full fat flaxseed flour were acceptable in relation to their overall acceptability. Significant reduction in the spread factor of the cookies was observed. Addition of the flaxseed flour restricted the spread of the cookies.

Kim et al. (2006) reported that nelumbinis semen or lotus seed is one of the most well-known traditional herbal medicines used to treat cardiovascular systems.

Lewis et al. (2006) studied that neither dietary flaxseed nor soy flour significantly affected menopause-specific quality of life.

Nuturia et al. (2006) founded that pounded petals of wheat are used for syphilis and the flower of wheat stalks combined with other herbs is used to treat bleeding from the uterus.

Ramula and Udayasekhararao (2006) reported that foods such as carrot, sweet potato cauliflower, kavai, lotus stem, soybean, garlic poppy, seeds and fenugreek seeds were rich in soluble dietary fiber. The fiber in lotus stem is helping in maintain digestive and bowel health.

Ramcharitar et al. (2006) observed that many persons aged 18 to 25 y did not think they needed to consume “health foods”. This “indifferent” and in some cases “negative” attitude toward the flax muffins, which they considered a “health food”, may have influenced the ratings the flax muffins received. Texture and flavor were strongly and positively correlated to overall acceptability. A flaxseed muffin provided at least 16% fiber of the daily recommended value.
Stellar (2006) stated that a deficiency of omega 3 products in the diet can cause many malfunction in the body cell, including the inability to hold water, nutrients and electrolytes and the loss of communication with other cells.

Yingying et al. (2006) suggested that flaxseed possesses fungistatic activity and could be used as a multifunctional food ingredient.

Young et al (2006) evaluated the chemical composition of lotus plumele oil. It helps heat from the heart to calm the nerves, to restore the coordination between the heart and the kidney, to check emission and to arrest bleeding.

Aysegul et al. (2007) reported that black carrot juice concentration when added to jam enhance the colour of strawberry jams. Colour and pigment stability of coloured and non-coloured (control) strawberry jam were studied during storage. The use of black carrot concentration as a source of natural colorent stabilized the colour of strawberry jam.

Bandhopadhyay et al. (2007) evaluated carotene-enriched carrots for their inhibitory effects on acidity developed and lipid oxidation in rasogolla during refrigerated storage.

Bajwa and Gupta (2007) studied about carrot milk cake samples procured from various localities in Ludhiana differed significantly in moisture, protein, fat, ash, carbohydrate, titerable acidity, pH, total carotenoids, texture hardness and the sensory scores for appearance, texture, flavour and overall acceptability.

Basch et al. (2007) reported that flaxseed and its oil have been promoted since the 1950s as a dietary nutrients with anti – cancer properties. Most of the evidence of its ability to prevent the growth or spread of cancer has come from a few studies in animals only recently has there been some some clinical evidence suggesting, that flax seed supplement, alone with a diet low in fat, may be useful in men with early stage prostate cancer.
Chiang and Luo (2007) stated that the texture of lotus root is hard and crispy, and the root can maintain its appearance and mouth feel after cooking at 100 °C for over 60 min. This study tried to elucidate relationships between pressurized cooking treatments (at 100 °C for 1, 3, 5, 10, 20, 30 min and at 110 °C, 121 °C and 132 °C for 1, 3, 5, 10, 20, 30 min, respectively) and changes in its chemical composition and texture. Results showed that the contents of hemi-cellulose and cellulose of lotus root decreased with increasing pressurized cooking temperature/duration during heat treatment while lignin content remained almost the same. The NDF contents decreased more than did the ADF contents. Relative hardness of lotus root decreased with increasing pressurized cooking temperature/duration while solid loss increased ($P < 0.05$).

Edward *et al.* (2007) postulated that linseed oil supplement dose not effect of plasma lipo-protein concentration or particles size in humans subject hence, reducing the risk of CVD.

Doyle (2007) suggested that Spoilage organisms are not originally an integral part of foods but are widely present in water, soil, air, and other animals. Healthy living plants and animals can ward off bacteria and fungi, but as soon as they are slaughtered or harvested their defenses deteriorate and their tissues become susceptible to spoilage microbes. colonization by many, but not all, microbes and are the most important first step in delaying the spoilage process. However, microbes are endlessly innovative and eventually seem to circumvent the barriers we set up against them. Therefore further strategies and multiple hurdles are utilized to extend shelf life. These procedures must be assessed for compatibility with different foods so that there are no significant organoleptic changes in the foods caused by the treatment or preservative.

Houng (2007) concluded that 'Australia Sumich' carrot contained the highest moisture, ash and lipid content meanwhile Kundasang variety carrot contained the highest protein content, total dietary fibre and total carbohydrate in 100 g of carrot.
**Kumari and Grewal (2007)** studied that prepared carrot pomace powder and analyzed it for proximate composition and total dietary fiber and incorporated at 10, 20, 30% in to wheat flour to prepare high fibre sweet ‘n’ salty biscuit.

**Mann and Thompsom (2007)** concluded that flax seed inhibit MCF – 7 tumor growth in a dose dependent manner and enhanced the inhibitory effect of TAM (tamoxifen) due to the modulation of estrogen receptor (ER) and growth factor signal transduction pathway.

**Özcan Mehmet Musa et al. (2007)** found that carrot seed are rich in protein, fiber and ash. The essential oil and edible oil compositions of carrot seeds from Konya were investigated by GC and GC-MS. The oil yields of essential and edible oil from carrot seeds were established as 0.83% and 7.84%, respectively. The major constituents of seed essential oil were carotol (66.78%), daucene (8.74%), (Z,Z)-α-farnesene (5.86%), germacrene D (2.34%), trans-α-bergamotene (2.41%) and β-selinene (2.20%). Whereas, carotol (30.55%), daucol (12.60%) and copaenol (0.62%) were the important components of edible carrot seed oil. However, the dominant component of both oils was carotol.

**Pruthi (2007)** studied on menopausal women and reported that 2 tablespoons of ground flax seed mixed into cereal, juice or yogurt twice a day out the women’s hot flax seed in half and the intensity of their hot flaxes dropped by 57 percent the women noticed a difference after taking the daily flax seed for just one week and achieved the maximum benefits with in two weeks.

**Sahoo et al. (2007)** carried out osmotic dehydration of carrots at 50, 55 and 60 percent concentration of sugar solution and at 30, 40 and 50 °C temperature. Apparent mass diffusivities of water from carrot samples to sugar solution and that of sugar solutes from sugar solution to carrot samples were estimated following Fick’s second law.

**Sgare and Siwek (2007)** reported that Nelumbonucifera is considered an important traditional Chinese herb and all parts of it are used in medicine. The rhizome extrzct showed anti-diabetic and obesity attributes. The leaves are known for their refrigerant, astringent and diuretic action.
**Sridhar et. al (2007)** reported that lotus seeds (*Nelumbo nucifera*) are edible, medicinally versatile and used as an important raw material of age-old traditional medical practices like Ayurveda and folk medicine. Tender rhizomes, stems and leaves of lotus are edible and its seeds are rich in protein as well as minerals. Petals are useful as garnish, while the stamens are used in flavoring the tea and the roasted seeds can be used as coffee substitute. Powdered popped seeds are eaten dry and useful in bread preparation. Seeds are raw material for Ayurvedic and folk medicines to treat many ailments such as tissue inflammation, cancer, diuretics, skin diseases and as poison antidote. Lotus plants provide several bioactive ingredients like alkaloids, flavonoids, antioxidants, antisteroids, antipyretic, anticancerous, antiviral and anti-obesity properties.

**Valerie et al. (2007)** produced carrot disc by combining of hand or machine abrasion peeling followed by either manual or machine slicing. Machine slicing was carried out using either sharp or blunt blades. The carrot were than packed in to a micro perforated oriented polypropylene film (PA-60) and stored for 6 days at 4 or 8 ⁰C. sensory descriptive analysis showed that more severe processing resulted in a grater loss of appearance and colour with increased surface whitening compared with manually processed carrot discs. Machine prepared carrot discs had a higher degree of lightness, with lower colour hues.

**Anton (2008)** concluded that Wheat flour tortillas are the fastest growing segment of the North American baking industry. As this market grows, the search for healthier alternatives to traditional foods also increases. Nutritionally, flour tortillas are rich in carbohydrates that generate a high glycemic index subsequent to ingestion, demonstrating a behaviour similar to white bread. Hence, the formulation of more nutritious tortillas, with higher levels of protein, dietary fiber and antioxidants, appears to be promising. Although the number of publications concerning the nutritional improvement of flour tortillas is limited, attempts utilizing soybean, whole wheat, and triticale flours have been reported. Additionally, as different ingredients are added to traditional formulations, the texture is very likely to be affected, as are the shelf-life and other sensory properties. Among other additives, hydrocolloids have been reported to improve the textural
qualities of bakery goods and flour tortillas. They comprise a number of water-soluble polysaccharides with varied chemical structures providing a range of functional properties.

**Barth et al. (2008)** reported that microbiological spoilage of fruit and vegetable products that are organized in three categories: fresh whole fruits and vegetables, fresh-cut fruits and vegetables, and fermented or acidified vegetable products. Spoilage microorganisms associated with each of these fruit and vegetable categories including spoilage mechanisms, spoilage defects, prevention and control of spoilage, and methods for detecting spoilage microorganisms. The further investigated the effect of breaks in the cold chain on microbial flora and shelf life of both intact and fresh-cut produce, especially fresh-cut fruits.

**Dobin et al. (2008)** evaluated the effect of flaxseeds on markets of CVD risk in healthy menopausal women. They concluded that flax seed increases some omega – 3 fatty acids in plasma and had limited effect on apolipo- protein metabolism.

**Dolores (2008)** found that antioxidant like beta carotene sponge up free radicals, those unstable molecules that cause many of the ills of advancing years. Among their many benefits, carrot are also noted for helping to prevent cataracts. Never be without them in your refrigerator. A whole medium carrot is only 30 calories.

**Gutierrez (2008)** found that carrots contain naturally occurring calcium, the mineral is poorly absorbed by the human body. In the modified carrots, a gene has been changed to allow calcium to move more freely across the carrots cell membranes, absorb 41 percent more calcium more calcium from the genetically modified carrot than from the natural variety. That amounts to a calcium content of between 27 and 29 mg/100g. of modified carrots.

**Hallund et al. (2008)** studied that the effect of a legnin complex isolated from linseed on inflammation markers in healthy post menopausal women. They reported that daily
consumption for six weeks of a low fat dalia enriched with a legnin complex may reduce (CRP) creative protein concentration compared to low fat dalia with to Lenin added.

**Hussain et al. (2008)** suggested that Roasted and non roasted full fat or partially defatted flaxseed flours (Linum Usitatissimum) were evaluated for their proximate composition, mineral profile and functional properties. Significant increase in the crude protein, crude fiber, ash and mineral contents in the partially defatted flaxseed flours (both roasted and non-roasted) was observed. Partial defattening improved the foam capacity, foam stability and water absorption capacities while roasting decreased the foam stability and capacity of the flours. Mineral profile and proximate composition of the roasted partially defatted flaxseed flours showed that this can be added in the many types of food applications as defattening solves the problem of stability while roasting effectively reduces the antinutritional factors like cyanogenic glycosides contents of the flaxseed. The replacement of roasted partially defatted flaxseed flours upto a level of 16% supplementation in whole wheat flour was found acceptable regarding the sensory attributes of chapattis.

**Kelly and Petrick (2008)** observed that many expert believes its betters to consume flaxseeds than flax oil (which contain just part of the seed) so get all component. But stay tuned researchers continue to investigate. Ground flax seed in general are a great first choice but there may be specific situation where flax oil or the lignin might be as good.

**Koca and Karadinez (2008)** determined carotenoids, total phenolics and antioxidant activity of carrots during 6 months of storage at 0 °C, 85-90 percent relative humidity. Cold storage of carrot did not affect the carotenoids levels (β-carotenes, α- carotene and total carotenoids) except lutein, which showed a 37.5 percent loss. Total phenolic concentration of carrots decreased significantly over the entire storage period. The antioxidant activity of carrots decreased with a level of 31 percent and was found correlated with total phenolics and lutein content in carrots.
Kreutzmann et al. (2008) combined quantitative analysis of volatile compounds isolated from raw carrots with sensory analysis in order to identify the role of these compounds on aroma and flavour perception in coloured carrots. The sensory map showed that the coloured carrots formed distinct group within the sensory profile. The orange genotypes were characterized by having significantly higher intensities in carrot flavour and aroma, while the reverse was true for yellow genotypes. The purple genotypes was characterized by having significantly higher intensites in carrot flavour and aroma, while the reverse was true for the yellow genotypes. The purple genotype was characterized by having significantly higher intensity in sickeningly sweet and nutty flavour, and the red genotype was characterized by having significantly higher intensities in green aroma and flavour, bitterness and burning aftertaste. From the multivariate data analysis it was concluded that the isolated terpenes do corretele to the harsh flavour atributes.

Nikolic et al., (2008) reported that fatty acid profile of wheat flour can be improved by its supplementation with rice flour because wheat flour is deficient in linolenic acid.

Oliveira et al. (2008) concluded that iron deficiency seems to deteriorate vitamin A metabolism leading to a reduction in serum retinol and an increase in hepatic retinol and retinyl easter. These alterations probably result from an increase in retinol sequestration to the liver and / or impairment in the activity of hepatic retinyl easter hydrolyses decreasing vitamin A mobilization.

Singh and Kulshrestha (2008) found that processed carrot to make carrot powder and grits by pressure cooking and drying at 50 °C for 18h. These were incorporated into traditional food products at different levels to increase vitamin A precursor levels. Results revealed that these enriched food products are good sources of crude protein, crude fiber, iron, calcium, carotene and dietary fiber. Enriched chapatti with 15 % carrot powder incorporation enriched halwa and sweet enriched dalia with 40 % carrot powder and 40 % carrot grits incorporation, respectively, were found most acceptable. Instant halwa formulation also showed good nutrient content per serving.
Singh et al. (2008) studied osmotic dehydration kinetics of carrot cubes in sodium chloride solution having concentrations 5, 10, and 15 percent (w/v), solution temperature 35, 45 and 55 °C, samples to solution ratio (STSR) 1:4, 1:5 and 1:6 to 240 min duration.

Singh and Mehta (2008) determined the equilibrium moisture contents for carrot cubes osmotically pretreated in salt, sucrose and salt plus sucrose combined solution using static method at 10, 25, 40 and 50 °C over a range of relative humidities from 14 percent to 95 percent.

Bassett et al. (2009) suggested that the dietary fibre and (or) lignan content of flaxseed provides the hypocholesterolemic action. The omega-3 ALA found in the flaxseed oil fraction also contributes to the antiatherogenic effects of flaxseed via anti-inflammatory and antiproliferative mechanisms. Dietary flaxseed may also protect against ischemic heart disease by improving vascular relaxation responses and by inhibiting the incidence of ventricular fibrillation.

Madhusudhan Basavaraj et al. (2009) reported that Flaxseed oil, lignan precursors and its mucilage have many potential uses in the prevention or treatment of disease as a nutraceutical (drug). Due to several health benefits dietary flaxseed is a valuable strategy to limit several life-style diseases including hormone-responsive tumor, cholesterol-induced atherogenesis as well as abnormalities in endothelial dependent vasorelaxation. Recovery shows, current nutritional understanding provides an excellent opportunity to reintroduce this important food to the world.

Park et al. (2009) found that all lotus cultivars (Inchisa, Muan, Garam, and Chungyang) possess high amounts of bioactive compounds: total phenols, between 7.95_0.8 and 4.21_0.3 mg of gallic acid equivalents (GAE)=g dry weight (DW); ascorbic acid, between 15.8_1.1 and 22.3_1.7 mg of ascorbic acid=g DW; and amino acids, between 15.05_0.82% and 16.62_0.90% DW. The highest contents of polyphenols (7.95_0.8 mg of GAE=g DW) and the highest levels of antioxidant [by 2,2-azino-bis(3-ethylbenzthiazoline-6-sulfonic acid) and 1,1-diphenyl-2-picrylhydrazyl assays, 54.27_6.1

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and 21.98 ± 2.5 mM Trolox equivalents=g DW, respectively] and antiproliferative activities on both human cancer cell lines (Calu-6 for human pulmonary carcinoma and SMU-601 for human gastric carcinoma, 59.75 ± 3.99% and 71.21 ± 2.79% cell viability, respectively) were found in the Chungyang cultivar. Fluorometry and Fourier transform infrared spectroscopy can be applied as rapid methods for determination of bioactive compounds, such as polyphenols. The correlation between the bioactive compounds and the antioxidant activity was high. In conclusion, all Korean white lotus cultivars are valuable medicinal foods, and in order to receive the best results a combination of lotus cultivars has to be consumed.

Thakur et al. (2009) studied the effects of ingestion of flax seed gum on blood glucose and cholesterol, particularly low-density lipoprotein cholesterol, in type 2 diabetes were evaluated. Flaxseed gum was incorporated in wheat flour chapattis. Results showed a decrease in low-density lipoprotein cholesterol from 110±8 mg/dl to 92±9 mg/dl (P=0.02). The study demonstrated the efficacy of flax gum in the blood biochemistry profiles of type 2 diabetes.

Udenigwe et al. (2009) showed that the protein components of flaxseed meal possess peptide amino acid sequences that can be exploited as potential food sources of anti-hypertensive agents.

Alhassane et al (2010) studied that Lignans are compounds found in a variety of plant materials including flaxseed, pumpkin seed, sesame seed, soybean, broccoli, and some berries. The major lignan in flaxseed is called secoisolariciresinol diglucoside (SDG). Once ingested, SDG is converted in the colon into active mammalian lignans, enterodiol, and enterolactone, which have shown promise in reducing growth of cancerous tumors, especially hormone-sensitive ones such as those of the breast, endometrium, and prostate. Known for their hydrogen-donating antioxidant activity as well as their ability to complex divalent transition metal cations, lignans are propitious to human health. The extraction methods vary from simple to complex depending on extraction, separation, fractionation, identification, and detection of the analytes. Flax lignan is also a source of
useful biologically active components found in plant foods, such as phytochemicals, and it is considered a functional food.

**Douglus et al. (2010)** reported that many types of vegetables are consumed all over the world. Vegetables are a rich source of calcium, iron, beta-carotene, vitamin C, riboflavin and folic acid. Vegetable not only add variety but also good source of dietary fibre.

**Hidemi et al. (2010)** evaluated the microbiological and physiological quality of fresh cut lotus after high pressure treatment held in film packages filled with water and stored at 1, 5 and 10 °C. The high pressure treatment reduced the count of mesophilic aerobic bacteria. Coli from groups, lactic acid bacteria to non-detectable levels on fresh cut lotus root. During storage, the bacteria counts remained below the limit of detection (2.4 logs CFU/g) until day 4 at 10 °C, day 6 at 5 °C and day 10 at 0°C. However, the treatment increased the rate of electrolyte leakage from tissue slices at all temperatures and induced brown discoloration. The brown discoloration of the first cut lotus root was less at 5 °C than at 10 °C and the fresh cuts did not develop browning during storage at 1 °C. The high pressure treatment reduced phenyl alanine ammonia lysae (PAL) activity and respiration rate and did not affect texture of fresh cut lotus root at all temperatures. These results indicate that high pressure treatment for 10 minutes would be useful as physical sterilization of fresh cut lotus root when stored in film packages filled with water at 1 °C after treatment.

**Du et al. (2010)** investigated that antioxidant and hepatic protective effects of lotus root hot water extract with taurine supplementation in high fat diet-induced obese rats.

**International Food Information Council (IFIC) and U.S. Food and Drug Administration (2010)** suggested that for many years to preserve, flavor, blend, thicken and color foods, and have played an important role in reducing serious nutritional deficiencies among consumers. These ingredients also help ensure the availability of flavorful, nutritious, safe, convenient, colorful and affordable foods that meet consumer expectations year-round.
Klaus (2010) examined a simplified linseed meal fractionation procedure for the extraction of protein and fibre has been developed. Response surface methodology was used to investigate optional parameters for linseed meal extraction. Based on the data on this extraction screening, the process technology was transferred to the pilot scale, obtaining a soluble protein and fibre containing fraction and an insoluble fibre fraction.

Lui and Lee (2010) studied on processing characteristics and flavour of lotus root powder beverages is well known aquatic vegetable in China and contains abundant amount of protein, aminoacid, dietary fibre, starch and vitamin C, B1 and B2. It is often used to make dishes such as salad, pickled, stir-fried foods and confections. Some heat labile compounds were obviously lost during its processing into powder. However, because of their processing properties, there was little loss of starch and soluble dietary fibre.

Lazko et al. (2010) concluded insulating material based on flax short fibres were prepared and their functional properties enhanced using linseed oil. In order to improve biocomposites hydrophobicity, the linseed oil was added to the initial formulation, mixed with the fibres and finally dried after moulding process. This the average water absorption of 10-40/140g./g.oil/ fibre samples was reduced up to times during the first hour of impression, compared to the reference oil free materials.

Moure et al. (2010) suggested that Oilseed proteins and modified or processed oilseed proteins can be incorporated into foods to impart nutritive value and functional properties. Functional properties influence protein behaviour during processing and storage. These properties can be modified by chemical and enzymatic treatment. Data corresponding to diverse oilseeds and from different defatting and extraction processes have been compiled and grouped according to the protein content into meals, concentrates, and isolates.

Oladunmoye et al. (2010) evaluated the particle size, moisture content, bulk density, color, water absorption capacity, pasting viscosity, fat and protein contents of wheat,
cassava, maize and cowpea flours were determined using standard methods. Composite breads were produced from 50:30:20, 60:20:20, 70:20:10; 80:10:10, 85:10:5 and 90:5:5 ratio of wheat–cassava/maize–cowpea flours, respectively. Breads produced were subjected to sensory and proximate analyses. Wheat flour had the lowest pasting temperature of 56.1 °C. Significance differences at P < 0.05 were recorded between most of the properties of the flours. Composite bread of 85% wheat, 10% cassava, 5% cowpea; 90% wheat, 5% cassava, 5% cowpea; and 90% wheat, 5% maize, 5% cowpea were accepted by a sensory evaluation panelist. Substitution with cowpea fruit improved the protein content of the bread.

**Rodriguez-Leyva et al. (2010)** stated that Marine food products have provided the traditional dietary sources of ω-3 fatty acids. Flaxseed is an alternative to marine products. It is one of the richest sources of the plant-based ω-3 fatty acid, alpha-linolenic acid (ALA). Based on the results of clinical trials, epidemiological investigations and experimental studies, ingestion of ALA has been suggested to have a positive impact on CVD. Because of its high ALA content, the use of flaxseed has been advocated to combat CVD.

**Rubilar et al (2010)** suggested that flaxseed consumption and its possible applications as functional food ingredient in foodstuffs. Flaxseed is mainly known by its high alpha-linolenic acid content, but it is also a lignan source, soluble fibre and protein, compounds which are biologically active in the prevention of some non-transmissible chronic diseases.

**Kripa et al. (2010)** reported that the carrot powder incorporated stick noodles product prepared with 5% carrot powder and 95% wheat flour was found to be most acceptable. The chemical analysis of the most acceptable product were found out to be 10.8% moisture, 0.6% fat, 10.3 % crude protein, 0.7% crude fiber, 1.7% total ash, 0.1% acid insoluble ash, 75.8% carbohydrate and 12166 I.U. Vitamin A content.

**Schelz et. al (2010)** reported that the biological properties of essential oils and other plant derived compounds with special regard to their antiinfective features and resistance
modifier activity, including antibacterial (gram-positive, gram-negative bacteria and Mycobacteria), antiplasmid activities both in vitro and in vivo.

**Shad et al. (2010)** reported that proximate composition and functional properties of rhizome flour of lotus cultivated in the Southern Punjab, Pakistan, were determined. The proximate composition (g/100 g flour) was determined as ash (1.10±0.66), the total nitrogen (1.36±0.04) total protein (8.48±0.25), total sugar (19.08±0.01) and free amino acids (0.78±0.035). The lotus rhizome was found to be a poor source of crude oil (2.68±0.04 g/100 g dry weight). Physico-chemical properties of the oil were investigated as acid value (16.66±3.05 mg KOH), saponification value (110.43±1.97 mg KOH) and unsaponifiable matter (0.026±0.11 g/100 g oil). The temperature dependent behaviour of solubility and swelling capacity of the flour showed a linear increase (1.2±0.35-13.84±0.91%) in solubility but an exponential increase in swelling capacity with a gradual increase in the temperature (40-100°C). Water absorption and oil holding capacities were found to be 2.56±0.05 and 2.03±0.25% respectively while least gelation concentration, foaming volume increase, foaming stability, emulsifying capacity and emulsion stability were investigated as 18.0±2.0, 5.23±0.03, 4.97±0.058, 48.93±0.35 and 96.43±0.51% respectively. The present data may provide a guideline for the use of lotus rhizome flour in food formulation.

**Shee et. al (2010)** result shows that at the concentration of 2.5 percent, salt was able to contain the growth of bacterial strains till the 3rd day and same concentration sugar was able to contain the growth of bacterial strains till the 5th day in the MH agar plate. Salt was ineffective after the 3rd day and sugar was inactive after the 5th day.

**Shyamala and Jamuna (2010)** reported that 100 g of carrot contains moisture 7.54 g, ash 5.78 g, protein 6.21 g, ether extract 2.72 g and crude fibre 32 g.

**Zhi and Coa (2010)** studied on the compatmentation of polyphenol oxidase and its substrates in relation with fruit browning treatments to control enzymatic browning of minimally processed lotus root were investigated. Enzymatic browning of external and cut surface of pre cut lotus roots (PLRs) were delayed by dipping them in 3% solution of
ascorbic acid, erythrobic acid, and citric acid and 5% acetic acid solution. The solutions mixed with several browning inhibitors were more effective in browning inhabitation of PLRs than those added with only one of the browning inhibitors alone. Among these treatments, solution supplemented with 2% erythorbic acid +1% citric acid was most effective in the inhibition of enzymatic browning. Browning of fresh PLRs was more effectively controlled by vacuum packaging than using browning inhibitors, the self life of vacuum packaged PLRs was increased when PLRs were blanced for 5 min in boiling water.

Dong and Ying (2011) studied browning reaction of lotus stem. It may also be roasted, steamed, pickled, fried. It may also be stuffed with rice or preserved in sugar. Before use, wash the lotus root well and pell, then quickly place sliced root pieces in cold water with a small amount of vinegar or lemon added, to avoid discoloration.

Herman Matthew (2011) concluded that flaxseed reduces total and LDL, or "bad," cholesterol concentrations. Whole flaxseed had the greatest effect on cholesterol levels and it had a greater effect on women, especially post-menopausal women. Flaxseed is also high in soluble fiber and can be taken as a laxative. Lignan is a chemical found in flaxseed that mimics the actions of estrogen and may prevent against cancer. Its preventive measures against cancer and the ability to reduce breast tumor growth.

Balestra et. al (2011) showed that The effects of addition of ginger powder (0, 3, 4.5 and 6%) in formulation were examined in order to obtain an antioxidant-enriched bread with good physico chemical and sensorial properties. The rheological properties of doughs were evaluated using dynamic rheological measurements. Physical properties, total phenolics content (TPC- Folin-Ciocalteau method), radical scavenging activity (RSA-DPPH assay) and sensory analysis (hedonic test) of the supplemented bread were determined. The highest TPC (0.48 and 0.71 mg GAE/g DW on crumb and crust respectively) and RSA activity (0.15 and 0.24 μmol DPPH/mg DW ml−1 on crumb and crust respectively) were achieved in the bread having the highest percentage of ginger powder (6%). But this sample showed the worst results regarding the rheological
properties indicating that the dough and the bread had a tough structure. Moreover, by sensory evaluation this bread sample was not acceptable.

**Kang and Lzzo (2011)** reported that lotus root becomes brown and degenerated easily, as a result losing its edible value. Coating can delay preservation period of lotus root effectively. In this process the surface treatment such as acid and chemical bactricides on lotus root fresh keeping by coating is studied. The result suggest that 0.006-0.07 mol/L citric acid treatment and 0.04-0.07 mol/L phosphoric acid treatment are both right method for lotus root preservation. 2% hydrogen peroxide processing for 10 min. can not suppress lotus root browning but can control its decay.

**Lee and Offemario (2011)** observed that the browning of surface and the growth of spoilage microorganism are the major causes for deterioration of fresh cut lotus root during the storage time. Conventional controlled atmosphere with low Oxygen concentration and chemical dip are effective in extending shelf life minimally processed fruit and vegetables, including inhibition of tissue browning. In this study, chemical dip, cinnamon oil fumigation and moderate and moderate vacuum packaging reduced significantly fresh cut lotus root browning and root decay. It could potentially be useful as a technology to extending the self life of fresh cut lotus root.

**Muhammad et al. (2011)** studied the proximate composition and functional properties of rhizome flour of lotus cultivated in the Southern Punjab, Pakistan, were determined. The proximate composition (g/100 g flour) was determined as ash (1.10±0.66), the total nitrogen (1.36±0.04) total protein (8.48±0.25), total sugar (19.08±0.01) and free amino acids (0.78±0.035). The lotus rhizome was found to be a poor source of crude oil (2.68±0.04 g/100 g dry weight). Physico-chemical properties of the oil were investigated as acid value (16.66±3.05 mg KOH), saponification value (110.43±1.97 mg KOH) and unsaponifiable matter (0.026±0.11 g/100 g oil). The temperature dependent behaviour of solubility and swelling capacity of the flour showed a linear increase (1.2±0.35 13.84±0.91%) in solubility but an exponential increase in swelling capacity with a gradual increase in the temperature (40-100°C). Water absorption and oil holding
capacities were found to be 2.56±0.05 and 2.03±0.25% respectively while least gelation concentration, foaming volume increase, foaming stability, emulsifying capacity and emulsion stability were investigated as 18.0±2.0, 5.23±0.03, 4.97±0.058, 48.93±0.35 and 96.43±0.51% respectively.

Mridula (2011) studies that soy flour fortified biscuits were prepared using different levels of carrot powder only, carrot powder with egg, and carrot powder with ascorbic acid, and evaluated for its physical properties, nutritional composition and sensory characteristics. Although spread ratio decreased, hardness increased, brightness decreased with increasing levels of carrot powder in flour blends in all the three types of biscuits but all the three types of biscuits samples were accepted by the sensory panelist. The mean overall sensory acceptability scores of more than 8 for biscuits samples up to 7.5% carrot powder indicates the commercial scope for manufacturing good quality vegetarian biscuits with carrot powder, which will also be helpful in providing daily dietary requirement of b-carotene to the consumers at 100g consumption level of these carotene rich biscuits.

Pruthi et al. (2011) found that women who ate fibre bars with added flax seed got no more relief than women who ate the same fibre bars with out flax seeds. The research is published in the journal of clinical oncology and presented at the 2011 annual meeting of the American society of oncology (ASCO). In this study, 188 post menopausal women ate a fibre bar every day for six weeks. Half the women ate a fibre bar had 410 milligrams of flaxseed legnins in it. All the womens rated their hot flashes and another vasomotor symptoms and over quality of life at the start of end of the study.

Rabetafika et al. (2011) observed that Flaxseed proteins are potent multi-functional ingredients for food formulation owing to their techno-functionalities, food preservation capacity, and health benefits. A possible synergistic effect with mucilage on their functionalities could be valuable even though this co-product in flaxseed may limit the protein yield during their production processes. Their techno-functional properties could
also be considered in mixture with other flax bioactive components such as lignans and fibre to enhance the value of the flaxseed meal.

**Singh et al. (2011)** found that the high dietary fibre in flaxseed, due to high water holding capacity and low digestibility, increasing the bulkiness and gastric emptying of stool. This is effect helps relieve constipation and other irritable bowl syndrome.

**Staceychil (2011)** reported that linseed helps in reducing the risk factor for coronary heart disease, recent research has shoes that linseed high omega 3 fatty acid content have help to reduce serum triglycerides and blood pressure. It also helps to reduce the hardening effects of cholesterol on cell membranes. Most of the soluble fibre in flax in mucitargete gum. Which is a thick, sticky substance that block cholesterol absorption and helps balance blood glucose levels.

**Singh et al. (2011)** reported that Flaxseed is one of the most important oilseed crops for industrial as well as food, feed, and fiber purposes. Almost every part of the flaxseed plant is utilized commercially, either directly or after processing. The stem yields good quality fiber having high strength and durability. The seed provides oil rich in omega-3 fatty acid digestible proteins, and lignans. In addition to being one of the richest sources of α-linolenic acid oil and lignans, flaxseed is an essential source of high quality protein and soluble fiber and has considerable potential as a source of phenolic compounds. Flaxseed is emerging as an important functional food ingredient because of its rich contents of α-linolenic acid (ALA), lignans, and fiber. Lignans appear to be anticarcinogenic compounds. The omega-3s and lignan phytoestrogens of flaxseed are in focus for their benefits for a wide range of health conditions and may possess chemoprotective properties in animals and humans.

**Staniszewska et. al (2011)** suggested that a commercial sample of carrot seed oil available on the Polish market was also examined; monoterpenes were the main compounds (64% of the total oil). Antimicrobial properties of the oils obtained were compared using four species of bacteria and two species of fungi. The MICs were
determined by the agar dilution method. The oils obtained from cultivated carrot seed were more effective against all tested organisms. The strongest overall activity was demonstrated by the commercial oil of cultivated carrot seeds.

Wendy et al. (2011) suggested that flaxseed-supplemented, fat-restricted diet may affect prostate cancer biology and associated biomarkers. Further study is needed to determine the benefit of this dietary regimen as either a complementary or preventive therapy.

Adegunwa et al. (2012) suggested that noodles made from the different flour blends can compare favourably with conventional noodles made from wheat flour in quality and that carrot flour can be used for noodle enrichment.

Cockerell et al. (2012) suggested that dietary fibre intake represents a long standing treatment for patients with irritable bowel syndrome (IBS), particularly for those with constipation. Linseeds are often recommended by both clinicians and dietitians as a source of dietary fibre to alleviate symptoms. Linseeds may be useful in relief of IBS symptoms. Further research is needed to detect clear differences between the effects of whole and ground linseeds.

Crickerd et al. (2012) reported that subtle manipulations of texture and creamy flavour can increase expectations that a fruit yogurt drink will be filling and suppress hunger, irrespective of the drink’s energy content. A thicker texture enhanced expectations of satiety to a greater extent than a creamier flavour, and may be one way to improve the anticipated satiating value of energy-containing beverages.

Ibrügger S, et al (2012) found that the flaxseed drink increased the feeling of fullness and significantly reduced the amount of food eaten following the drink when compared to the control group. Similar findings were found when the flaxseed drink was compared to the supplement.
Khattab et al. (2012) studied that addition to the eminent nutritional and functional roles of flaxseed cake strongly advocate its incorporation into the formula of pita bread and similar bakery products for nutritious, healthy and functional foods.

Katere et al. (2012) studies indicating the role of raw flaxseed and its baked products in health promotion and disease prevention. This review highlights the potential of ‘flax seed’ as a ‘neutraceutical’ and its role as a protective and therapeutic medicinal food.

Katere et. al (2012) showed that possess significant antioxidant and anti-inflammatory functions in experimental as well as human studies. The flax seed supplementation in diet revealed potential health benefits in situations like cardiovascular risk, certain types of cancers and other metabolic disorders. There are number of studies indicating the role of raw flaxseed and its baked products in health promotion and disease prevention. This review highlights the potential of ‘flax seed’ as a ‘neutraceutical’ and its role as a protective and therapeutic medicinal food.

Li et. al (2012) reported that the effects of ozone treatment on the microorganism mortality in wheat flour and shelf-life of fresh noodles were investigated, as well as the physicochemical properties of wheat flour and textural qualities of cooked noodles. Results showed that the total plate count (TPC) can be largely reduced in wheat flour exposed to ozone gas for 30 min and 60 min. Whiteness of flour and noodle sheet, dough stability, and peak viscosity of wheat starch were all increased by ozone treatment. Free cysteine content in wheat flour was shown to decrease significantly (P<0.05) as the treatment time increased and remarkable protein aggregates were observed in both reduced and non-reduced SDS-PAGE patterns. In addition, ozone treated noodles were generally higher in firmness, springiness, and chewiness, while lower in adhesiveness. Microbial growth and darkening rate of fresh noodles made from ozone treated flour were delayed significantly.

Okereke et. al (2012) reported that the probiotic potentials of lactic acid bacteria species isolated from various food sources (nono, ugba, ogiri, kunun-zaki and ogi) were
studied. The predominant species among the isolated strains were *Lactobacillus bulgaricus, Lactobacillus fermentum, Lactobacillus plantarum, Lactobacillus brevis, Streptococcus thermophilus Leuconostoc mesenteroides* and *Pediococcus cerevisiae*. They produced bacteriocins that inhibited the growth of *Streptococcus aureus, Escherichia coli* and *Bacillus cereus*. *L. bulgaricus* and *L. plantarum* were selected for the fermentation of vegetable substrates—carrot, cucumber and tomatoes and cereals—rice and maize for the purpose of studying the suitability of these raw materials for probiotic juice production. The fermentations were carried out at 30°C for 72 h. The lactic acid bacteria had viability counts of $10^9$ during storage at 4°C. The minimum pH attained during fermentation of samples was 3.9. The best bacteriocin preservative effect of 90% was observed in maize.

**Poojara et al. (2012)** revealed that a total of 66 street food outlets were present which served more than fifty different preparations. The focus of the study was to examine the microbiological profile of street foods. The street foods were classified on the basis of degree of processing as unprocessed, semi processed and processed foods. From each category two food stuffs were selected and three samples were collected for the assay. Apart from the food samples five, water and ice samples from the outlets were collected. Microbiological parameters assayed were *S. aureus, V. cholerae, Salmonella, Total coliforms* and *E. coli*. Majority of the water and ice samples were not potable. Microbiological assay revealed that high temperature processing of foods make them microbiologically safe for human consumption by killing pathogenic organisms. The results reveal high degree of contamination in unprocessed foods and semi processed foods. Processed foods that have undergone processing at high temperatures are less contaminated. Water and ice used by street food vendors was microbiologically unsafe.

**Rath et. al (2012)** studied that microbiological quality of three popular street foods namely, Panipuri, Dahibara and Chaat. In total 25 samples were collected in and around from different vendors in Baripada, Odisha, India. Informal observations of the vendors were also carried out. All the samples were subjected to coliform analysis, determination of total aerobic bacterial load and isolation of pathogenic bacteria on selective media.
86.66 percent of the samples were coliform positive. Apart from E. coli, other food borne pathogens like Shigella dysenteriae, Salmonella spp., Streptococcus faecalis, Bacillus cereus, Enterobacter spp., Pseudomonas spp. were also isolated. It was reported that pathogens like E. coli and B. cereus could survive for a longer period in these food samples. All the isolates showed high multiple antibiotic resistance index ranged between 17.64 - 47.05. Susceptibility of these pathogens against ten different essential oils was evaluated and oils showing better antibacterial activities were used to determine their Minimum Inhibitory Concentrations (MIC) against these bacterial pathogens. Both Clove and Japanese mint oils could kill the pathogens (E. coli) in the food samples within 48hrs.

Pam (2012) reported that The seeds, oil and seed meal can be used in many ways. Flaxseeds contain phytoestrogens, which may reduce your risk of breast cancer and possibly prevent a recurrence. The fibers from the flax plant have been used in linen fabric, yarns and bandages.

Sharma et al. (2012) reported that the consumption of carrot and its products is increasing steadily due to its recognition as an important source of natural antioxidants having anticancer activity. Apart from carrot roots being traditionally used in salad and preparation of curries in India, these could commercially be converted into nutritionally rich processed products like juice, concentrate, dried powder, canned, preserve, candy, pickle, and gazrailla. Carrot pomace containing about 50% of β-carotene could profitably be utilized for the supplementation of products like cake, bread, biscuits and preparation of several types of functional products.

Takefumi et al. (2012) studied that the aqueous extract was prepared from a lotus root (a rhizome of Nelumbonucifera), and the cytoprotective effect of the extract was examined. The chemical analyses showed that the extract contained polyphenolic compounds, which might confer the radical scavenging and antioxidant activities on the extract, thereby being expected to protect the cells. Actually, the extract prevented the iron-induced oxidative damage, but not the azide-induced hypoxic damage to the cells. Therefore, lotus root extract is considered to contain novel substance(s) protecting glial cells against
the iron-induced oxidative insults. Retaining the integrity of brain function through the protection of neuronal cells against toxic insults, and the protection of glial cells is proposed to be beneficial for the prevention of neurodegenerative diseases. Then, to search for substance(s) protecting glial cells against the cytotoxic insults.

**Tsuruta et al. (2012)** studied that lotus root powder can protect mice from hepatic injury. After 3 weeks of feeding, hepatomegaly. Hepatic triglyceride accumulation, and elevated hepatic injury markers in the serum were markedly alleviated in the lotus diet-fed db/db mice relative to the control mice. These effects were partly attributable to suppression of the lipogenic enzyme activities and mRNA expression by the lotus root. The serum levels of adiponectin, which has been reported to have a protecting effect against Non-alchoholic fatty liver disease, were significantly higher in the lotus group than in the control group of the db/db mice. The hepatic expression of such inflammatory gene as tumor necrosis factor alpha and monocyte chemoat-tractant protein-1 were markedly suppressed by lotus diet.

**Kohajdova (2012)** studied that Carrot pomace powder can be considered as suitable functional ingredient for wheat rolls. Enrichment wheat flour with low concentrations of carrot pomace powder not only increases nutrition value of products but also did not have signifi cant impact on their quality and sensory acceptability.

**Gani et al. (2013)** observed that lotus stem was treated by gamma-irradiation at different doses of 5, 10 and 20 kGy. Physicochemical, morphological and pasting properties of irradiated lotus stem starches were investigated and these properties differed significantly. Carboxyl content, water absorption capacity, amylose leaching, and transmittance increased, whereas swelling power, apparent amylose content, syneresis, and pasting properties decreased after the modification in a dose dependent manner. Observation under scanning electron microscope (SEM) showed that some of the starch granules were destroyed by gamma-irradiation and the breakage was much greater at a higher dose (20 kGy). X-ray diffraction pattern remained the same upon irradiation but a dose dependent decrease in relative crystallinity was observed.
**Gazalli et al. (2013)** Carrot and apple pomace powder was prepared and proximate composition was evaluated in terms of moisture, ash, protein, ether extract and crude fibre. Average contents of moisture, ash, protein, ether extract and crude fibre in carrot powder were 8.78, 5.05, 6.16, 2.43 and 24.66 per cent respectively, and average content of moisture, ash, protein, ether extract and crude fibre in apple pomace powder were 9.75, 3.97, 5.11, 3.12 and 20.06 per cent respectively.

**Madukwe et al. (2013)** evaluated the nutrient content and microbial quality of soymilk fortified with carrot powder. Carrots, soybeans, sugar and flavourings were bought from local retailers in Ogige main market, Nsukka in Enugu State, Nigeria. The fresh carrots were washed, scrapped, trimmed, sliced, sundried, grinded, packaged and stored in a labeled polythene bag. The soybean seeds were sorted, cleaned, washed, soaked for 18 hours, drained and blanched for 25 minutes at 89°C. The blanched beans were pulverized with hot water; the paste formed was diluted with water at 1:5 and then sieved to get the soymilk. The soymilk was cooked for 23 minutes at 87°C. Flavor agents and sugar were added, 20g each of carrot powder was added to 500ml and 600ml of soymilk respectively. Microbial loads of the samples were also determined. It revealed that proximate composition, vitamin and mineral contents of the fortified soymilk (CS2 and CS3) were higher than the plain soymilk (CS1). The total viable count of microbes of the samples CS1 and fortified soymilk (CS2 and CS3) were 4.85×10⁰CFU/mls, 6.25×10¹ CFU/mls and 6.80×10¹ CFU/mls, respectively. The result of the microbial counts revealed that the fortified soymilk (CS2 and CS3) contain higher microbial loads than the plain soymilk (CS1).

**Masiha et al. (2013)** evaluated the suitability of flaxseed oil as a source of supplemental dietary lipid for fingerlings of rainbow trout (*Oncorhynchus mykiss*). Triplicate groups of the 30 fingerlings held under identical culture conditions were fed twice daily by iso-nitrogenous, iso-calorific and iso-lipidic diets for 8 weeks. Experimental diets consisted of 30.2% protein, 18.6 kJ g⁻¹ energy and 16.5% lipid from fish oil (FO), flaxseed oil (FxO) and 1:1 blends of the oils (FFxO). Moisture, ash, protein, final body weight, specific growth rate, weight gain, feed conversion ratio, survival and hepatosomatic index were not affected by treatments but the percent of lipids was significantly highest in fish.
fed the flaxseed oil diet (FxOD). The condition factors of fingerlings reared on FxOD and fish and flaxseed oils diet (FFxOD) were significantly lower than those fed the fish oil diet (FOD). Protein efficiency ratio (PER) was significantly higher than those fed the FOD and FFxOD. Whole body fatty acid compositions mirrored those of diet treatments. The highest amounts of highly unsaturated fatty acids (HUFAs) were detected in fish fed 100% FO, which was significantly different from other treatments. In all treatments polyunsaturated fatty acids/saturated fatty acids (PUFAs/SFAs) and n-6/n-3 ratios were higher than 0.45 and lower than 4, respectively. Results indicate the fingerlings can be reared on diets in which FO has been replaced with FxO, with no significant effects on fish performance.

Mesbah et. al (2013) studied that the sweets and sweet products were microbiologically examined for the load and type of bacteria. Cultural and Biochemical characterization of the isolates showed the presence of six bacterial genera (Streptococcus sp., Klebsiella sp., E. coli, Proteus sp., Bacillus sp. and Corynebacterium sp.). All types of them were found in different sweets and five types of them were found in different sweet products. Bacterial genera of Streptococcus, Klebsiella, E.coli, and Proteus were found in Rasmalai; Streptococcus sp., Klebsiella sp., Proteus sp. and Bacillus sp. were found in Cream Toast; Streptococcus sp., Klebsiella sp., E. coli, and Bacillus sp. were found in Chamcham; and Klebsiella sp., Bacillus sp. and Corynebacterium sp. were found in Kachhagolla. Bacterial genera Streptococcus, Klebsiella sp., and E. coli were found in Sweet Yoghurt and Streptococcus sp., Klebsiella sp. and Proteus were found in Sandesh. The results indicate that strict hygienic conditions should be adopted to ensure contamination free sweets and sweet products for the good health of all consumers.