

Review

Prevention and treatment of different health problems by common people's diet (Haleem)

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Malnutrition is the major problem in many countries of the world including Pakistan. Due to inadequate macro and micro nutrients, prevalence of diseases is increasing day by day. Haleem is a common diet that can be used by people of all age group. It is prepared by different methods and consists of *Lens culinaris* L., *Hordeum vulgare* L., *Phaseolus vulgaris* L., *Vigna mungo* L., *Vigna radiate* L., *Cicer arietinum* L., *Oryza sativa* L., *Triticum aestivum* L., *Gallus gallus domesticus*, *Brassica napus* L., *Zingiber officinale* Rosec., *Curcuma longa* L., *Allium sativum* L., *Allium cepa* L., *Capsicum annuum* L., *Cinnamomum zeylanicum* L., *Cuminum cyminum* L., *Myristica fragrans* Houtt, *Piper longum* L., *Mentha piperita* L., *Amomum subulatum* Roxb., *Coriandrum sativum* L., *Mangifera indica* L., *Citrus lemon* L. and rock salt. These materials either from plant, animal and mineral origin contain variety of substances such as dietary fibers, energy, proteins, carbohydrates, lignins, tannins, flavonoids, phytosterols, squalene, tocopherols, saponins, pre-biotics, plant acids, sterol, crude fibre, fats, vitamin and minerals.

Key words: Neurological disorder, nutrition, micronutrients, macronutrients, bioactive compounds.

INTRODUCTION

Consumption of food that contains large quantity of plant material provides abundant phyto-chemicals and non-nutritive material that has protective effect on human health. Natural dietary agents such as fruits, vegetables, spices and biologically active compounds have drawn a great attention from scientific community and general public due to their health promoting effects (Shukla and Singh, 2007; Rizwani and Zahid, 2014). Plant derived foods have potential health benefits as their consumption is increasing by 5 to 10% annually. Health organizations

are recommending increasing the intake of plant-derived foods to prevent chronic diseases and improve health status worldwide (Tang et al., 2014). Patients suffering from chronic inflammatory diseases are turning to dietary supplements for prophylactic treatments and relief of symptoms (Jolad et al., 2004). Malnutrition of micronutrient is influencing greater than one-half of the world's population, especially women, teenage girls and preschool children. Occurrence of imbalance food is in abundance in developed and developing countries.

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Human health depends on the availability, affordability and acceptability of balanced diet (Ramakrishnan et al., 2015). People awareness tofo the health benefits of foods is increasing day by day and are paying attention to disease prevention and health promoting compounds of food (Nyau, 2015). Haleem is a tempting combination of lentils and meat that is widely made on special occasion and it is also used as a breakfast, lunch and dinner. It is commonly prepared in the month of Muharram in Pakistan.

However, there is no updated compilation on the importance of Haleem and its composition. The present review therefore, endeavors to provide for the first time an updated compilation of phyto-constituents and nutritional value which can subsequently open new perspectives for further research.

COMPOSITION OF HALEEM

Haleem is one of the most popular and favorite dish in Middle East, Central Asia and in Indian Subcontinent. It is a very healthy traditional recipe and its composition varies from region to region. It is slowly cooked for seven to eight hours and results in a paste-like consistency. Haleem is normally enjoyed with naan or with any type of bread as such eaten with spoon in Pakistan. It is a high-calorie dish, provides protein from the meat and fibre and carbohydrates from the various combinations of grains and pulses.

PHYTOCONSTITUENTS AND NUTRITIONAL VALUE

Allium sativum L.

A. sativum (Family Liliaceae) is known as garlic (English) or lehsan (Urdu). Chemical constituent of garlic are alliin, diallyl sulfide (DAS), diallyl disulfide (DADS), diallyl trisulfide, ajoenes, methyl allyl di- and trisulfides, vinyl dithiols, c-glutamylcysteine, steroidal glycosides, essential oil, flavonoids, lectins, prostaglandins, fructan, pectin, adenosine, vitamins B1, B2, B6, C, E, biotin, nicotinic acid, fatty acids, glycolipids, phospholipids, essential amino acids, arginine, aliin, alliin, germanium, calcium, copper, iron, potassium, magnesium, selenium, zinc, allinase, vitamins A, B1 and C (Pantoja et al., 1996; Bozin et al., 2008; Gaafar, 2012). *A. sativum* contain energy 1109 KJ, tryptophan 58 mg, water 53.6 g, lysine 549 mg, protein 12.0 g, threonine 376 mg, lipid 5.1 g, valine 1.040 mg, methionine 116 mg, dietary fiber 1.2 g, phenylalanine 534 mg, ash content 2.3 g, leucine 737 mg, sodium 53.9 mg, iso leucine 404 mg, calcium 13.0 mg, cystine 318 mg, iron 2. mg, tyrosine 592 mg, vitamin B2 0.1 mg, arginine 1964 mg, vitamin B6 10.7 mg, histidine 318 mg, nicotinic acid 14.0 mg, alanine 722 mg, aspartate 1 560 mg, glutamate 2456 mg, glycine 563 mg,

proline 318 mg and serine 477 mg and also contain manganese, selenium, calcium, vitamins B1 and B6 (Suleria et al., 2015).

Allium cepa L.

A. cepa (Family Liliaceae) is known as onion (English) or piyaz (Urdu). It contain carbohydrates which include glucose, fructose, sucrose, low-molecular weight fructo-oligosaccharides, quercetin, quercetin 3,4'-diglucoside, quercetin-4'-glucoside, flavonoids, glycosides, proteins, alkaloids, saponins, reducing sugars, oils, ceptosides A, ceptosides B, ceptosides C, flavonoids, vitamins and organosulphur compounds are also present. It contain vitamin C, vitamin B6, folic acid, energy 40 kcal per 100 g, sodium 16.15 mg, potassium 185.05 mg, phosphorus 19.24 mg, calcium 375.15 mg, iron 2.60 mg, magnesium 232.05 mg and manganese 213.65 mg (Edet et al., 2015; Ige and Akhigbe, 2013; Russo et al., 2012).

Amomum subulatum Roxb.

A. subulatum (Family Zingiberaceae) is called large cardamom (English) or bari ilaichi (Urdu). It contains essential oils, anthocyanins, aurone, chalcone, flavanone, 1,8-Cineole, α -pinene, β -pinene, geraniol, 1,8-cineole, terpenyl acetate, monoterpene hydrocarbon, that is, limonene, sabinene, terpinenes, pinenes, cineol, limonene, myrcene, α -terpinene, 4-terpinene, petunidin-3,5-diglucoside, leucocyanidin-3-O- β -D glucopyranoside, subulin, 1-8 cineole and α -terpinyl acetate. The fruit consists of 70% seeds and 30% skin from which seed contain 8.6% moisture, 5% total ash, 4% non-volatile, 91.4% of total solid, volatile oil content varies between 1.95 and 3.32%, copper 7.4 mg/kg, nickel 0.006 mg/kg, zinc 57.6 mg/kg, lead 0.015 mg/kg, cobalt 5.4 mg/kg, cadmium 0.2 mg/kg, iron 111.2 mg/kg and chromium 0.003 mg/kg (Vivaiya et al., 2012; Bisht et al., 2011).

Brassica napus L.

B. napus (Family Brassicaceae) is called rape-seed (English) or Rai (Urdu). It is third largest source of vegetable oil in the world, providing high quality edible oils and raw materials for industry and biodiesel (Liu et al., 2015). It contains protein, polyphenols, phytosterols, tocopherol, canolol, flavonoid glycosides and glucopyranosyl sinapate, having antioxidant activity (Jing et al., 2008). Each 100 g of canola oil contain omega-3-linolenic acid 10 to 12%, oleic acid 59 to 62%, linoleic acid 18 to 22%, linolenic acid 10 to 12%, calories 884, vitamin E 17.46 mg, vitamin K 71.30 mcg, monounsaturated fat 63.28 g, polyunsaturated fat 28.14 g, saturated fat 7.37 g, stigma sterol 3 mg, campesterol

241 mg, beta sitosterol 413 mg.

***Capsicum annuum* L.**

C. annuum (Family Solanaceae) is known as chilli (English) or mirch (Urdu). It is used as spice due to its flavor, color and pungency. It contains ascorbic acid, carotenoids, tocopherols, flavonoids, capsaicinoids, polysaccharide, phenols, flavonoids, capsaicinoids, sterols, triterpenes, organic acids, fatty acids, volatile compounds, furostanol saponin derivative, vitamins C, E, carotenoids, phenolics compounds, capsaicin, dihydrocapsaicin, nordihydrocapsaicin, homocapsaicin, homodihydrocapsaicin, nonivamide and L-asparaginase (Majee et al., 2015; Loizzo et al., 2015).

***Cicer arietinum* L.**

C. arietinum (Family Leguminaceae) is called as chickpea (English) or Channa (Urdu). It is the oldest and widely consumed legume in the world due to its good source of energy, protein, minerals, vitamins, fiber and health-beneficial phytochemicals. It contains proteins 21.70 – 23.40%, carbohydrates 41.10 – 47.42% from which starch is 83.9%, minerals, trace elements (Zia-Ul-Haq et al., 2007; Esmat, 2010), phenolic acids, isoflavones, aliphatic acids, aromatic acids, flavonoids, volatile compounds, polyamines, coumarins, phytosterols, flavonoids, phenolic compounds, tannins, carbohydrates, amino acids, fixed oils, fats, dietary fiber (Mamta and Parneet Kaur, 2013), quercetin, kaempferol, flavonols, flavanones, isoflavones, hydroxybenzoic and hydroxycinnamic acids. It contain carbohydrate such as sucrose 4.3%, raffinose 1.0%, stachyose 2.8%, fructose 0.1%, galactinol 0.5%, glucose 0.1%, manninotriose 3.4%, pinitol 0.2%, lysine 45-79 mg, methionine 7-31 mg, cystine 7-18 mg, phenylalanine 30-68 mg, tyrosine 20-35 mg, isoleucine 44-60 mg, leucine 49-80 mg, threonine 28-48 mg, valine 38-63 mg, tryptophan 2-12 mg, sterol, tocopherol, fatty acids, copper 1.18 µg, iron 4.60 µg, zinc 6.11 µg, manganese 1.21 µg, calcium 220 µg, magnesium 119 µg, phosphorus 398 µg, chromium 0.08 µg, vitamin C 2.15-6.00 mg, thiamin 0.028-0.40 mg, riboflavin 0.15-0.30 mg, niacin 1.6-2.90 mg, pyridoxine 0.55 mg, folic acid 150.0 µg and vitamin K 120.0 µg in each 100 g (Jukanti et al., 2012).

***Cinnamomum zeylanicum* L.**

C. zeylanicum (Family Lauraceae) is known as cinnamon (English) or dar chini (Urdu). It is used as spice and flavoring agent in food due to characteristic pleasant odour. The bark contains L-arabino-D-xylan, D-glucan, phenolic compounds and Type-A procyanidine

polyphenols (Sarathy, 1987; Kitazuru et al., 2004).

***Citrus lemon* L.**

C. lemon (Family Rutaceae) is called lemon (English) or limo (Urdu). It contains flavanones, flavones, flavonols, anthocyanins, coumarins, limonene, β- pinen, flavanone glycosides, hydroxycinnamic acids, vitamin C, carotenoids, flavonoids, citric acid, vitamin C, potassium, citric acid, carboxylic acid. 100 g of raw lemon contains carbohydrates 9.32 g, sugars 2.50 g, dietary fiber 2.8 g, fat 0.30 g, protein 1.10 g, thiamine 0.040 mg, riboflavin (vitamin B2) 0.020 mg, niacin 0.100 mg, pantothenic acid 0.19 mg, vitamin B6 0.080 mg, folate 11 µg, vitamin C 53.0 mg, calcium 26 mg, iron 0.60 mg, magnesium 8 mg, phosphorus 16 mg, potassium 138 mg and zinc 0.06 mg (Guimaras et al., 2010; Lorente et al., 2014).

***Coriandrum sativum* L.**

C. sativum (Family Umbelliferae) is called coriander (English) or dhania (Urdu). The fruit contain proteins, vitamins, calcium, phosphorus, iron, fibers, carbohydrates, petroselinic acid and the oil is composed of limonene, β-phellandrene, eucalyptol, linalool, borneol, β-caryophyllene, citronellol, thymol, linalyl acetate, geranyl acetate, caryophyllene oxide, elemol, methyl heptenol, pinenes, γ-terpinene, myrcene, geraniol and borneol, limonene, p-cymene, camphor, coriandrin, coriandrins A-E, dihydrocoriandrin, flavonoids, oleic, petroselinic and linolenic, linalool 60-80%, geraniol 1.2-4.6%, terpineol 0.5%, terpinene 1-8%, cymene 3.5%, limonene 0.5-4%, pinene 0.2-8.5%, camphene 1.4%, myrcene 0.2-2%, ketones 7-9%, camphor 0.9-4.9%, geranyl acetate 0.1-4.7%, linalyl acetate 0-2.7%, (E)-2-decenal, dodecenal, (E)-2-tridecenal, dodecanal (Bhuiyan and Sultana, 2009; Nadeem et al., 2013).

***Cuminum cyminum* L.**

C. cyminum (Family Umbelliferae) is known as cumin (English) or zeera (Urdu). It contains terpenes, glycosides, myrcene, α-phellandrene, α-pinene, β-pinene, cyminal, α-terpene, γ-terpinene, p-cymene, cyminum, cumaldehyde, cuminaldehyde, cymene, terpenoids, 2-ethoxy-3-isopropylpyrazine, 2-methoxy- 3-s-butylpyrazine and 2-methoxy-3-methylpyrazine, contain fixed oil (about 10%), protein, cellulose, sugar, mineral elements, volatile oil (1.5%) and phenolics compounds (Akrami et al., 2015; Hajlaoui et al., 2010).

***Curcuma longa* L.**

C. longa (Family Zingiberaceae) known as turmeric (English) or haldi (Urdu). Major chemical constituent are

curcumin (Selvam et al., 1995), demethoxycurcumin (DEMC), bisdemethoxycurcumin (BDEMC) (Li et al., 2014) and turmerone. Turmeric contain 0.76% alkaloid, 0.45% saponin, 1.08% tannin, 0.03% sterol, 0.82% phytic acid, 0.40% flavonoid, 0.08% phenol, 8.92% moisture, 2.85% ash, 4.60% crude fiber, 6.85% fat, 9.40% crude protein, 67.38% carbohydrate, 0.89% thiamine, 0.16% riboflavin, 2.30% niacine, 0.20% calcium, 0.63% phosphorus, 0.46% potassium and 0.05% iron (Ikpeama and Nwankwo, 2014). Each 100 g of turmeric contain ascorbic acid 50.0 mg, ash 6.8 g, calcium 0.2 g, carbohydrate 69.9 g, fat 8.9 g, energy 390.0 K Cal, iron 47.5 g, niacin 4.8 mg, potassium 200.0 mg, phosphorus 260.0 mg, protein 8.5 g, riboflavin 0.19 mg, sodium 30.0 mg, thiamine 0.09 mg and water 6.0 g.

Gallus gallus domesticus

G. gallus domesticus is commonly known as chicken (English) or Murghi (Urdu). Its meat is important in people's daily life as it provide abundant protein, fat, trace elements (Xiong et al., 2015), low proportion of saturated fatty acids, higher proportion of polyunsaturated fatty acids, eicosapentaenoic and docosahexaenoic acid (Almeida et al., 2006). Each 100 g of chicken contain energy 916 kJ, fat 12.56 g, saturated 3.5 g, mono saturated 4.9 g, protein 24.68 g, tryptophan 0.276 g, threonine 1.020 g, isoleucine 1.233 g, vitamin A equiv. 44 µg, pantothenic acid (B5) 0.667 mg, iron 1.16 mg, sodium 67 mg, water 63.93 g, serine 0.870 g, proline 1.190 g, glycine 1.583 g, leucine 1.797 g, lysine 2.011 g, methionine 0.657 g, cystine 0.329 g, arginine 1.545 g, phenylalanine 0.959 g, tyrosine 0.796 g, valine 1.199 g, histidine 0.726 g, alanine 1.436g, aspartic acid 2.200 g and glutamic acid 3.610 g.

***Hordeum vulgare* L.**

H. vulgare (Family Gramaniae) is commonly known as barley (English) or Jao (Urdu). It contains protein that constitute glutamine, proline (Fatemeh, et al., 2015), B-D-glucan, phenolic compounds, B-complex vitamins, tocotrienols, tocopherols (Asima et al., 2015), benzoic and cinnamic acid derivatives, proanthocyanidins, quinones, flavonols, chalcones, flavones, flavanones and amino phenolic compounds (Gallegos-Infante et al., 2010). Each 100 g of barley contain energy 370 kcal, protein 10.5 g, fat 3.7 g, carbohydrate 73.6 g, starch 68.2 g, total fiber 17.5 g, soluble fibre 5.8 g, insoluble fiber 11.7 g, β-glucan 3.2 g, resistant starch 0.09 g, lignin 1.0 g, magnesium 110 mg, phosphorus 410 mg, potassium 410 mg, chloride 117 mg, iron 6.1 mg, zinc 2.4 mg, calcium 40 mg, copper 0.59 mg, sulphur 120 mg, manganese 1.3 mg, iodine 60 µg, thiamin 0.50 mg, riboflavin 0.06mg, niacin 0.50 mg, tryptophan 2.5 mg,

vitamin B6 0.22 mg, total folates 107 µg, pantothenic acid 1.0 mg, biotin 1.7 g and vitamin E 0.51 mg (Theobald et al., 2006).

***Lens culinaris* L.**

L. culinaris L. (Family Leguminaceae) is commonly called lentil (English) or masoor dal (Urdu). Seeds are source of calcium, iron, vitamin B, protein, carbohydrates, fibers contents (Kripi, 2012), lectins, defensin protein, Bowman-Birk trypsin inhibitors (Mo'ez Al-Islam et al., 2012), phytosterols, squalene, tocopherols, saponins, flavonoids, tannins, phytic acid, oligosaccharides (Jameel and Ali, 2015), hydroxybenzoic acid, hydroxycinnamic acids, glycosides of flavonols and flavones, trans-resveratrol-3-O-glucoside and proanthocyanidins (Fратиани, et al., 2014). Each 100 g of lentil constitute moisture 10.4 g, energy 353 Kcal, protein 25.8 g, fat 1.1 g, carbohydrate 60.1 g, fiber 30.5 g, sugar 2.03 g, calcium 55 mg, iron 7.5 mg, magnesium 122 mg, phosphorus 451 mg, potassium 955 mg, sodium 6 mg, zinc 4.8 mg, vitamin C 4.4 mg, thiamin 0.9 mg, riboflavin 0.2 mg, niacin 2.6 mg, vitamin B6 0.5 mg, folate 479 µg, vitamin A 39 IU, vitamin E 0.5 mg, vitamin K 5 µg, saturated fatty acids 0.2 g, monounsaturated fatty acids 0.2 g and polyunsaturated fatty acids 0.5g (Zahra, 2015).

***Mangifera indica* L.**

M. indica (Family Anacardiaceae) is called mango (English) or aam (Urdu). Each hundred gram of fruit pulp contain 250 kJ energy, prebiotic dietary fiber, vitamin C, polyphenols and pro vitamin A and carotenoids. Seed is a single flat oblong with fiber or hairy on the surface. Seed kernel contain 6.0% protein, 11% fat, 77% carbohydrate, 2.0% crude fiber and 2.0% ash, high in potassium, magnesium, phosphorus, calcium and sodium, essential and non-essential amino acids, stearic, palmitic acids, oleic and linoleic acids oleic, polyphenols, phytosterols, campesterol, sitosterol and tocopherols. Each 100 g of seed contain vitamin A 15.27 IU, 1.30 mg vitamin E, 0.59 mg vitamin K, 0.08 mg vitamin B1, 0.03 mg vitamin B2, 0.19 mg vitamin B6, 0.12 mg vitamin B12 and 0.56 mg vitamin C (Olorunaiye et al., 2012; Fahimdanesh and Bahrami, 2013).

***Mentha piperita* L.**

M. piperita (Family Lamiaceae) is known as mint, peppermint (English) or podina (Urdu). It is rich sources of iron and magnesium. It contain menthol, menthone, menthyl acetate, neomenthol, isomenthone, menthofuran, ascorbic acid, β-carotene, acetylmenthol, neomenthone, pulegone, limonene, pulegone, alpha and beta pinene,

trans-sabinene hydrate, caffeic acids, flavonoids, tannins, 50-78% free menthol, monoterpene, menthofurane and traces of jasmine (0.15%) that improve the quality of oil (Valmorbidia and Boaro, 2007; Shah and Mello, 2004; Saeed et al., 2014).

***Myristica fragrans* Houtt.**

Myristica fragrans (Family Myristicaceae) known as nutmeg (English) or jaiphal (Urdu). It contains oleoresin hydrocarbon monoterpenes 61-88%, that is, α -pinene, β -pinene, sabinene monoterpenes acid 5-15%, aromatic ether 2-18% such as myristicin, elemicin, safrole. Kernel contains volatile oil, fats, starch, mucilage, myristicin, myristic acid, while volatile oil contains pinene, sabinene, camphene, elemicin, isoelemicin, eugenol, methoxyeugenol, isoeugenol and safrole (Rodianawati et al., 2015; Sonavane et al., 2002).

***Oryza sativa* L.**

O. sativa (Family Graminae) is called rice (English) or Chawal (Urdu). It is a source of bioactive non-nutrient compounds known as phytochemicals and major food for the rural population and household food security (Calpe, 2006). Rice is good source of complex carbohydrates, thiamine, niacin, riboflavin, vitamin D, calcium and fibers (Umadevi et al., 2012). Endosperm of rice consists mostly of starch which is 90% of total weight of rice (Morales-Martinez et al., 2014). Each hundred gram contains moisture 10.20 g, energy 361.00 kcal, carbohydrates 82.00 g, protein 6.00 g, total fat 0.80 g, dietary fiber 0.60 g, calcium 8.00 mg, phosphorus 87.00 mg, potassium 111.00 mg, sodium 31.00 mg, vitamin B1 (Thiamine) 0.07 mg, vitamin B2 (Riboflavin) 0.02 mg and vitamin B3 (Niacin) 1.80 mg. Rice grains consist of protein 8%, iron 1.2 mg/100 g, zinc 0.5 mg/100 g, glutamic acid, aspartic acid and lysine 3.8% (Babu et al., 2013).

***Phaseolus vulgaris* L.**

P. vulgaris (Family Leguminaceae) is known common bean (English) or Lal lobia (Urdu). It is considered as perfect food because of high protein, fiber and complex carbohydrates content (Rosales et al., 2012). Seed contains 20–25%, phaseolin 40–50%, lectins 10–27%, phytohemagglutinin (PHA), polyphenolic compounds, alkaloids, fiber, saponins, steroids, lectins and terpenoids. Common bean contains fructo oligosaccharides, raffinose, phenolic acids and flavonols. It has energy of 347.00 kcal, protein 21.42 g, total fat 1.23 g, carbohydrate 62.55 g, fiber 15.50 g, total sugar 2.11 g, calcium 113 mg, iron 5 mg, magnesium 176 mg, phosphorus 411 mg, potassium

1393 mg, sodium 12 mg, zinc 2 mg, vitamin C 6.30 mg, thiamin 0.71 mg, riboflavin 0.21 mg, niacin 1.17 mg, vitamin B6 0.47 mg, folate 0.53 mg, vitamin E 0.21 mg, vitamin K 5.6 μ g, saturated fatty acids 0.24 g, monounsaturated fatty acids 0.23 g and polyunsaturated fatty acids 0.41g (Romero-Arenas et al., 2013).

***Piper longum* L.**

P. longum (Family Piperaceae) is known as black pepper (English) or kali mirch (Urdu). It consists of pipericyclobutanamides A and B, piperine, isopiperolein B, 1-peperoyl piperidine, phenolics, flavonoids, alkaloids, amides, steroids, lignans, neolignans, terpenes, chalcones, brachyamide B, dihydro-pipericide, (2E,4E)-N-eicosadienoyl-piperidine, N-trans-Feruloyltryamine, guineensine, N-formylpiperidine, pentadienoyl as piperidine, (2E,4E)- Nisobutyl- Idecadienamid, tricholein, isobutyl-eicosadienamide, trichostachine, isobutyl-eicosatrienamide, isobutyl-octadienamide, piperamide, piperamine, piperettine, pipericide, piperine, piperolein B, sarmentine, sarmentosine and retrofractamide (Li et al., 2005; Fujiwara et al., 2001).

Rock salt

Rock salt from Khewra salt mine of Pakistan is composed of NaCl 93.6%, Ca 0.849%, Mg 0.438%, 1.300%, SO₄ 2.016%, silver 0.63 mg, aluminum 26.121 mg, boron 19.500 mg, barium 25.157 mg, bismuth 7.141 mg, cadmium 8.947 mg, cobalt 0.766 mg, chromium 3.769 mg, copper 1.984 mg, iron 49.844 mg, gallium 9.782 mg, indium 6.710 mg, lithium 3.82 mg, manganese 6.748 mg, nickel 6.096 mg, lead 9.714 mg, strontium 37.894 mg, tellurium 11.560 mg and zinc 17.548 mg in each 100 g (Titler, 2009).

***Triticum aestivum* L.**

T. aestivum (Family Gramineae) is called wheat (English) or Ghandum (Urdu). The nutritional value of wheat is extremely important as it is an important crop being widely grown as staple food. Wheat germ contains 11% oil, protein, threonine, methionine, lysine, raffinose, sucrose, thiamin, riboflavin, tocopherol, polyunsaturated fatty acid 45-60%, linolenic 11%, oleic acid 12-30%, saturated fatty acids 14-17%, palmitic acid, stearic acid 0.5-2.3% (Zarroug et al. 2015). Wheat is considered a good source of mineral such as zinc, iron, selenium and magnesium, vitamins such as thiamine, vitamin-B, pantothenic acid, pigments, enzymes, carbohydrate 78.10%, protein 14.70%, fat 2.10% (Kumar et al., 2010, 2011), antioxidants, phytochemicals and dietary fibers. It also contains lipids 8-13%, fats 1.5%, proteins 13% that

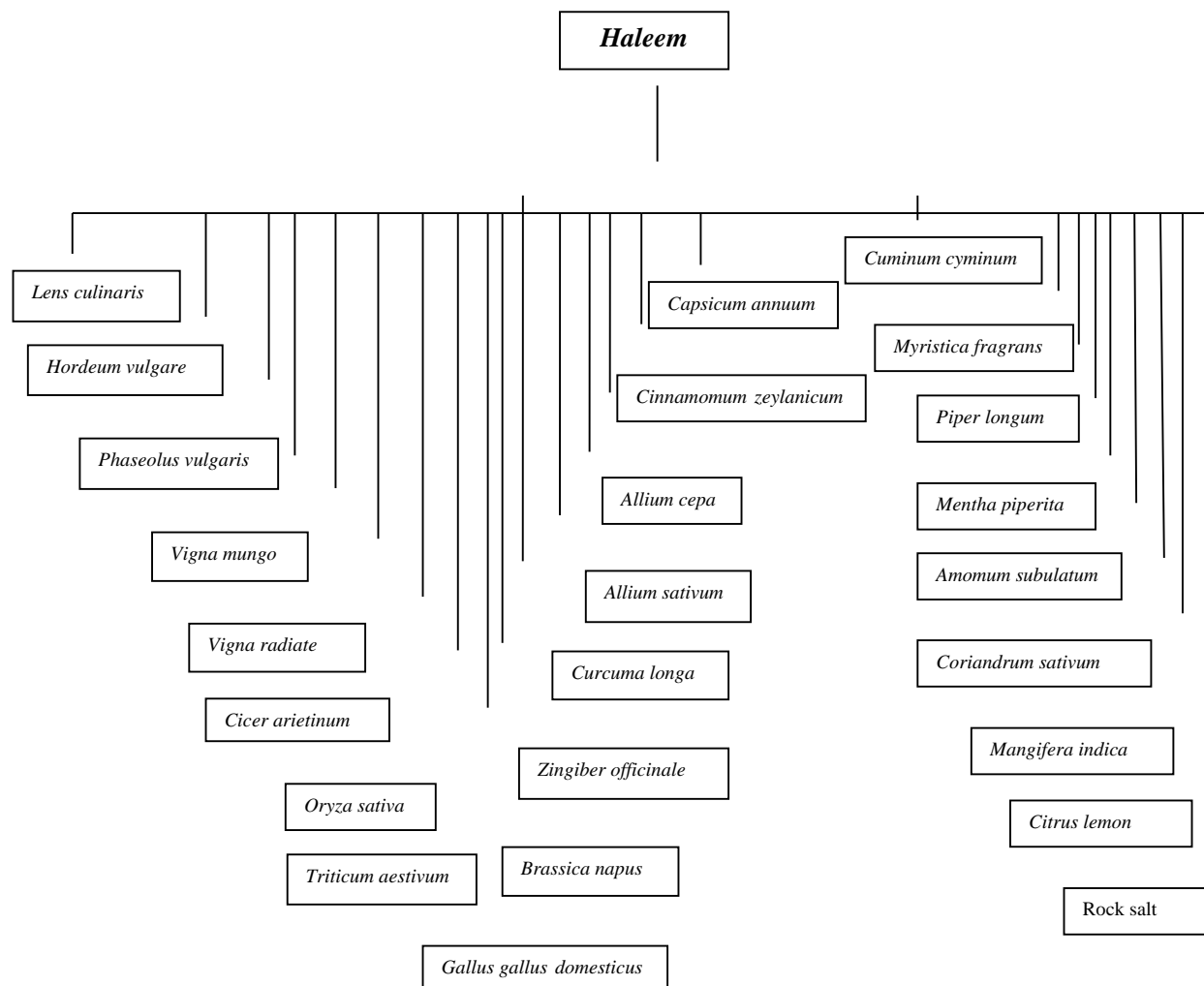


Figure 1. The tempting combination of haleem.

are albumins, globulins, glutenins, gliadins, minerals (ash) 0.5% and dietary fibers 1.5%, vitamin E, glutamine, proline, alanine, arginine, asparagine, glycine, lysine and threonine (Šramková and Šturdík, 2009).

***Vigna mungo* L.**

V. mungo (Family Leguminaceae) is commonly known as black gram (English) or urd (Urdu). It is an important pulse crop and provides major share of protein requirement for vegetarian population. It is used in the form of split pulse as well as whole pulse (Ajila, and Rao, 2009). Whole black gram is a rich source of protein, fiber, several vitamins, calcium, iron (Girish and Rao, 2012), fructose, non-reducing oligosaccharides, sucrose, raffinose, stachyose, verbascose, ajugose (Kotiguda and Mulimani, 2006; Suneja et al., 2011). *Vigna mungo*

contain moisture of 7.9%, ash 2.9%, fiber 3%, fat 1.01% and each 100 g contain energy 350 calories, carbohydrates 56.6%, proteins 26.2%, fat 1.2%, calcium 185 mg, iron 8.7 mg, phosphorus 345 mg, vitamin B1 0.42 mg, vitamin B2 0.37 mg and niacin 2 mg (Suneja et al., 2011).

***Vigna radiata* L.**

V. radiata (Family Leguminaceae) is called green gram (English) or mung bean (Urdu). It is an important pulse crops grown in Asia. *V. radiata* contain moisture content of 9.74%, ash 2.91%, fiber 3.1% and fat 1.35% (Shaheen et al., 2014), ascorbic acid, folic acid, protein, iron, calcium, fiber, alkaloid, flavonoid, tannins (Bhandurje et al., 2012), vitamin C, vitamin B complex, calcium, fiber, iron, potassium, magnesium and

Table 1. Pharmacological activities.

Plant	Pharmacoligical activities
<i>Allium sativum</i> L.	It has antithrombotic, antihypertensive, anti-hyperglycemic, anti hyperlipidemic, diuretic, inhibit sodium transporting epithelia and decrease ATPase activity, antimicrobial activity, anti-atherosclerotic, antidote for heavy metal poisoning, hepatoprotective, prevents cold and flu symptoms, anticancer chemopreventive and have antioxidant activity. It also have antiseptic, prevent anthrax in cattle, vermifuge and anti leishmaniasis activity (Lanzotti et al., 2015). It is used for treatment or prevention of type 2 diabetes and obesity (Schmidt et al., 2014; Ademiluyi et al., 2013).
<i>Allium cepa</i> L.	It reduces the risk of various chronic diseases such as cardiovascular, cancer, asthma, diabetes and have neuroprotective potential[88]. It have antibiotic, anti-diabetic, antioxidant, anti-atherogenic, anticancer activities, decrease plasma total cholesterol level (Singh and Goel, 2015), lower risk of breast cancer, provide protection against hepatotoxicity and nephrotoxicity. Onion has been known to have antimicrobial, antioxidant and/or anticancer effects. It is used for treatment or prevention of type 2 diabetes, obesity, hypercholesterolaemia, hypertension, coronary heart disease, cataracts, inhibit the tumor and microbial cells (Schmidt et al., 2014; Ademiluyi et al., 2013)
<i>Amomum subulatum</i> Roxb	It used in the treatment of gastrointestinal, digestive disorder, nausea, dyspepsia, cough, vomiting, itching, throat trouble, lung congestion, mouth infection, digestive disorders, cardiac tonic, expectorant, appetizer, diuretic (Jafri and Singh 2001; Verma et al., 2012).
<i>Brassica napus</i> L.	It is used as diuretic, anti-scurvy, anti-inflammatory of bladder and anti-goat. Also, the seeds were documented to use for treatment of hepatic and kidney colic. Colza seeds are also used in the Eastern folk medicine as bronchial cathartic (Zargari, 2001).
<i>Capsicum annuum</i> L.	It has antioxidant, antifungal, antiproliferative properties, seeds inhibited lipid accumulation, inhibit adipocytes differentiation, have potential against cancers, prevent gastric ulcer, stimulate the immune system, prevent the cardiovascular diseases, protect against age-related macular degeneration and cataract ((Barbero et al., 2015; Sung et al., 2015).
<i>Cicer arietinum</i> L.	Chicken pea is used as appetizer, anthelmintic, alleviates thirst and burning sensation, used for bronchitis, leprosy, skin diseases, inflammation of the ear, blood disorders and biliousness, liver and spleen diseases and is hypocholesteremic agent (Zia-UI-Haq et al., 2007). It is used as diuretic, antifungal, potent nutraceutical, complaints of chest, throat troubles, fever.
<i>Cinnamomum zeylanicum</i> L.	It is used in chronic bronchitis, impotence, frigidity, dyspnea, inflammation of the eye, leukorrhea, vaginitis, rheumatism, neuralgia, toothaches, hypoglycemic, cholesterol lowering agent, promotion of wound healing, antimicrobial agent, analgesic, anti-pyretic, immunomodulatory, anti-complementary, anti-arthritis activity, insecticidal, acaricidal, antityrosinase, antimutagenic, enteralgia, anti-nociceptive, antipyretic, anti-complementary and immunosuppressive activity (Barceloux 2009; Unlu et al., 2010).

Table 1. contd.

<i>Citrus lemon</i> L.	Lemon has antimicrobial, chemo-preventive, antispasmodic, anti-nociceptive, relief of heartburn, gastro esophageal reflux disorder, soothe sore throats, reduce high blood pressure, prevents kidney stones, treat flaky dandruff, washing agent for teeth, additive agent for flavoring foods, arthritis, rheumatism, headaches (Nasser and Hussain 2014; Mohanapriya et al., 2013)
<i>Coriandrum sativum</i> L.	Coriander has antibacterial, antidiabetic, anticancerous, antimutagenic, antioxidant, antiemetic, anti-inflammatory, antiseptic, emmenagogue, antihypertensive, lipolytic, myorelaxant, nerve-soothing and healing properties, used in anorexia, dyspepsia, flatulence, diarrhea, griping pain, vomiting, serves as tonic, diuretic and aphrodisiac (Darughe et al., 2012)
<i>Cuminum cyminum</i> L.	Cumin is used as anticarcinogenic, astringent, stimulant, carminative, remedy for indigestion, astringent, flatulence, diarrhea, hypoglycemic effect, aldose reductase (AR) and alpha glucosidase inhibitory activity, used for toothache, dyspepsia, epilepsy, jaundice, diuretic, carminative, antispasmodic, hoarseness, jaundice, antitumor, anti-inflammatory, antifungal, antibacterial, antioxidant, antispasmodic, stimulate breast milk production and jaundice (Kedia et al., 2014; Dhandapani et al., 2002; Kedia et al., 2015).
<i>Curcuma longa</i> L.	It is used as potential anti-cancer, antioxidant, anti-coagulative, anti-hepatotoxic, dissolve urinary calculus and control the diabetes (Selvam et al., 1995). In traditional medicines the rhizomes of <i>Curcuma longa</i> are used as carminative, stomachic, anthelmintic, laxative, in liver ailments, household remedy for anorexia, cough, rheumatism, intestinal disorder, headache, cold, chronic catarrh, migraine, inflammation, improve sex hormone, lower cholesterol, cytotoxins, have antioxidant (Ikpeama and Nwankwo, 2014). It's also used for the treatment of diseases that are associated with injury and inflammation, increase the capacity of learning and memory.
<i>Hordeum vulgare</i> L.	It is considered as an important nutraceutical grain due to its high dietary fiber and phenolics contents that reduce risk of cardiovascular diseases, cancer and used to treat bladder inflammation, cholera, dermatitis, diabetes and inflammations (Asima et al., 2015; Jebor et al., 2013)
<i>Lens culinaris</i> L.	It has antifungal, blood purifying property, remove old skin marks, used to treat kidney and gastric ailments while flour has bacteriostatic and/or antibiotic effect (Butu et al., 2014)
<i>Mangifera indica</i> L.	kernel are used as source for functional food ingredients, antimicrobial compounds, adsorbent, cosmetics and antioxidants (Kittiphoom, 2012)
<i>Mentha piperita</i> L.	Peppermint has an antiseptic, antipruritic, antispasmodic, antiemetic, carminative, diaphoretic, analgesic, anticatarrhal, antimicrobial, rubefacient, stimulant, emmenagogue properties. It is also used for colic in infants, flatulence, diarrhea, indigestion, nausea, vomiting, morning sickness, anorexia, and as a spasmolytic, treat the irritable bowel syndrome, Crohn's disease, ulcerative colitis, gallbladder and biliary tract disorders, liver complaints. Peppermint oil is used to relieve menstrual cramp, externally for neuralgia, myalgia, headaches,

Table 1. Cont'd.

	migraines and chicken pox, vapors used as an inhalant for respiratory congestion (Saharkhiz et al., 2012; Adel et al., 2015).
<i>Myristica fragrans</i> Houtt.	It has anti-carcinogenic, antioxidant, antifungal activity, carminative, astringent, hypolipidaemic, antithrombotic, antiplatelet aggregation, antifungal, aphrodisiac, and anti-inflammatory activities. It is also used for treatment of rheumatism, cholera, psychosis, stomach cramps, nausea, diarrhea, flatulence, anxiety and used as aphrodisiac and an abortifacient (Kwon et al., 2008).
<i>Oryza sativa</i> L.	It used for nourishment of skin and blood vessels, maintain internal water balance along with other nutrients. In ayurveda rice is considered as tonic, aphrodisiac, diuretic and useful in biliousness, increases appetite, cures indigestion, give tone to muscles, expel gas from the stomach and intestine, nourish the hormonal system, heal wounds and regulate blood pressure (Umadevi, et al., 2012; Saha, et al., 2014).
<i>Phaseolus vulgaris</i> L.	It has antiviral, antibacterial, antimutagenic, anticarcinogenic, antioxidant, antihypertensive activities, promotes the synthesis of C-globulin, ribonucleic acid (RNA), deoxyribonucleic acid (DNA), induce mitosis, antiplatelet, antidiabetic, diuretic, antipyretic, carminative, diaphoretic, emmenagogue (Romero et al., 2013; Badari et al., 2015)
<i>Piper longum</i> L.	Black pepper is used in intermittent fevers, indigestion, diarrhea, flatulence, worm infestation, asthma, cough, heart troubles, diabetes, piles, epilepsy, elephantiasis, stimulate the pancreatic and intestinal enzyme. It is used as antihypertensive, anti platelets, antioxidant, antitumor, anti-asthmatics, antipyretic, analgesic, anti-inflammatory, anti-diarrheal, antispasmodic, anxiolytic, antidepressants, hepato-protective, immuno-modulatory, anti-thyroids, antiapoptotic, anti-metastatic, antimutagenic, anti-spermatogenic, anti-colon toxin, insecticidal, larvicidal activities, enhance cognitive action (Chatterjee et al., 2007; Lee et al., 2008).
Rock salt	Rock salt aids in digestion, laxative, used for digestive disorders, improves appetite, removes gas, soothes heartburn, facilitates the cellular absorption of minerals, stabilizes blood pressure, aids in weight loss, strengthens the bones, connective tissue and give flavour to food (Titler, 2009).
<i>Triticum aestivum</i> L.	Prevent heart diseases, cancer, pyorrhea and diabetes, lower the risk of breast cancer and prostate cancers, enhance the heart and lung functions (Kumar et al., 2011), used in the treatment of cancer and in cute diarrhea, have antifungal and antioxidant activity (Kumar et al., 2010).
<i>Vigna mungo</i> L.	Black gram have cholesterol-reducing effect, hypolipidemic, hypoglycemic, protective effect against colon cancer, demulcent, aphrodisiac, used for diabetes, nervous disorders. It used for the treatment of rheumatism, affections of nervous system, diseases of the liver, in gastric catarrh, dysentery, diarrhea, cystitis, paralysis, piles, dropsy, diuretic (Verma et al., 2014; Pranshu et al., 2011).
	Mung bean have diuretic, hypotensive, hypolipidemic, hepatoprotective, antibacterial, antifungal, nematocidal,

Table 1, Cont'd.

<i>Vigna radiate</i> L.	antidiabetic activity, nervine tonic, improve learning and memory process (Bhandurge et al., 2012). It possesses detoxification activities, refresh brain, alleviate heat stroke, reduce swelling, regulate gastrointestinal upset, and moisturize the skin (Shaheen et al., 2014).
<i>Zingiber officinale</i> Roscoe	It is used for musculo-skeletal diseases, flatulence, spasmodic affections of the bowels, headache, affections of the throat, rheumatic disorders, carminative (Mustafa, 1989, 1992), atherosclerosis, high cholesterol, ulcers, depression, impotence, flu-like symptoms and intestinal lipase enzyme (Stoilova et al., 2007). Ginger is considered as rubefacient, antiasthmatic, stimulant to the gastrointestinal tract, antioxidant, antihypercholesterolem, inhibit LDL oxidation, lower blood glucose and urea, maintain the integrity of red blood cells (Morten, 2001; Penna et al., 2003).

manganese (Bhandurge, 2012).

***Zingiber officinale* Roscoe.**

Z. officinale (Family Zingiberaceae) is called ginger (English) or adrak (Urdu). Ginger contains zingiberene 35%, curcumene 18%, farnesene 10%, bisabolene, b-sesquiphellandrene, 1,8-cineole, linalool, borneol, neral and geraniol. Non-volatile pungent compounds gingerols, shogaols, paradols, zingerone, oleoresins, fats, waxes, carbohydrates, vitamins, minerals, potent proteolytic enzyme zingibain, poly phenolic compounds such as 6-gingerol and its derivative (Stoilova et al., 2007). Ginger contain essential oil, alpha zingiberene (Kelly et al., 2002), b-phellandrene, (+)-camphene, cineole, geraniol, curcumene, citral, terpineol, borneol, a-zingiberene 30–70%, b-sesquiphellandrene 15–20%, b-bisabolene 10–15%, (E-E)-a-farnesene, arcurcumene, zingiberol. Ginger also contain gingerols, shogaols, 3-dihydroshogaols, paradols, dihydroparadols, acetyl derivatives of gingerols, gingerdiols, mono- and di-acetyl derivatives of gingerdiols, 1-dehydrogingerdiones, diarylheptanoids, gelicoidenol-2- α

D-glicopyranoside (Penna et al., 2003). Each 100 g of ginger contain moisture 15.02%, insoluble fiber 23.5%, soluble fiber 25.5%, protein 5.087 g, fat 3.72 g, carbohydrates 38.35 g, vitamin C 9.33 mg, total carotenoids 79 mg, calcium 88.4 mg, phosphorous 174 mg, iron 8 mg, zinc 0.92 mg, copper 0.545 mg, manganese 9.13 mg and chromium 70 μ g (Prakash, 2010).

Conclusion

From the above discussion, it is concluded that haleem can be used as a rich source of protein, carbohydrates, fatty acids, vitamins, minerals, alkaloid, glycosides, tannins, resins, flavonoids, pigments and source of energy. Due to these reasons, it is a good remedy for prevention and treatment of many diseases such as neurological problems, gastrointestinal problem and it is beneficial for growth of children and immunosuppressive patients.

CONFLICT OF INTERESTS

The authors have not declared any conflict of

interests.

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