About the Editor

Dr. Ram B Singh comes from a multidisciplinary background. He began his career with an undergraduate degree in Science, followed by a Medical Science degree, and an MD degree in Internal Medicine with specialization in Cardiology. Dr. Singh further extended his career specializing in the area of Nutritional Science. During the subsequent years, He became much involved in clinical research, integrating nutrition and cardiovascular disease (CVD) along with its risk factors.

Dr. Singh's research, especially on magnesium relating to CVD has received a great deal of international recognition. He was first to (a) perform Radioimmunoassay of serum digoxin in relation to digoxin intoxication in the year 1971-73 [1, 2], (b) demonstrate the role of magnesium deficiency in the pathogenesis of arrhythmias in patients with digoxin toxicity [3], (c) develop a concept of magnesium deficiency as a risk factor of digitalis intoxication [4], (d) report magnesium deficiency among patients with pulmonary heart disease [5] and atrial fibrillation (96), and (e) propose that magnesium deficiency is a risk factor for refractory cardiac arrhythmias [6] as well as for the elderly [7]. Furthermore, Dr Singh was first to report the role of magnesium deficiency in the pathogenesis of digoxin toxicity in children [8] with particular emphasis of its role in coronary artery disease (CAD), sudden cardiac death (SCD) [9, 10], and ventricular fibrillation [10]. These reports earned him an invitation by the editor of the American Heart Journal to write an annotation [11] and by the editor of the Practical Cardiology to write a review article [12]. Dr Singh proposed that the role of magnesium deficiency and its repairement in the neurons, cardiomyocytes, , arterial endothelial and smooth muscle cells are important factors in predisposing CAD and SCD [12, 13]. He reported the association between chronic active hepatitis and cardiomyopathy [14] and magnesium deficiency in the brain predisposing sudden death and the role of magnesium and potassium in hypertension [15-19]. Dr. Singh proposed a hypothesis that calcium channel antagonists modulate calcium by increasing magnesium influx by influencing magnesium ATPase and magnesium channels [20]. It is known that calcium channel blockers do not block the calcium channels, but they simply delay the opening of the channels, resulting in a decreased entry of calcium.

In 1987, Dr Singh began to explore the positive impact of a diet rich in whole grains, fruits, vegetables, nuts and w-3 rich oils on the prevention and outcome of CVD. This was the time when the report of the Seven Country Study indicating saturated fat and cholesterol as the cause of CAD, was overemphasized, but soon it was realized that other content of diet such as fruits, vegetables, and nuts due to their high content of micronutrient and polysaccharides are also important. Dr. Singh published numerous papers on various aspects of CVD and diabetes, based on this work, some of which were presented in the 14th International Congress on Clinical Nutrition in Korea and subsequently published in other journals [21-24]. Using multiple nutritional intervention studies involving patients with acute myocardial infarction, Dr. Singh came about with a revised suggestion for diet and nutrients for these patients [25-31]. Dr. Singh and his associates were one of the first few who used DASH diet for prevention of CVD [21-24]. He conducted a large randomized, controlled trial with 400-500g/day of fruits, vegetable, legumes and nuts (almonds, walnuts) in conjunction with mustered oil in patients with AMI which was published in leading international journals [32-34]. These novel studies provided evidence regarding the role of diet in acute coronary syndromes, which was subsequently confirmed by Searge Renaud [33] group of the Lyon Heart Study, France in 1994. Dr Singh's work also revealed that exercise enhances our capability to adapt against gradual rather than abrupt increase in salt and fatty acids intake, causing less rise in cardiovascular risk factors [35]. He also conducted a randomized, controlled trial examining the effects of a diet containing 400-500g/day of fruits, vegetable, legumes and nuts (almonds, walnuts) in conjunction with mustered oil on the outcome of patients with AMI [32-35]. This important study provided some convincing evidence to support the beneficial role of the diet in acute coronary syndromes. His further work involving this diet along with a functional food (e.g., guava, a vitamin C-rich fruit) and exercise has confirmed these findings in the elderly with heart disease [36-39]. Dr Singh proposed that the occurance of CVD may be a manifestation of adaptation to our body against the lifestyle factors [40, 41]. He also showed that dietary supplementation of these nutrients via foods can decrease diuretic induced Hypokelemia and hypomagnesemia in association with aggravated hypertension [42, 43]. Dr Singh was one of the experts who did not agree with the hypothesis that genetical factor being the primary factor for heart disease among South Asians [44, 45]. In effect, he demonstrated a marked gradient in risk factors among rural and urban subjects compared to immigrant Indians in London indicating that environmental factors rather than the genetic factor appear to be important in the pathogenesis of heart disease among the population in Indian sub-continent.

Dr. Singh reported mineral and vitamin metabolism in patients with acute myocardial infarction(AMI) [46-48] and emphasized that multiple nutrient supplementation in AMI may be protective [26-28, 32-34]. He also demonstrated the antioxidant effects of commiphora mukul in a randomized trial, in patients with hypercholesterolemia [49]. This herb has been mentioned for the treatment of atherosclerosis in the ancient treatise Sushruta samhita. In 1994, he published a randomized trial of fruits, vegetables, nuts and mustered oil in patients with central obesity [50]. He wrote invited review article in the leading Journal of the Association of Physicians of India [51] and an editorial in a British journal [52]. He published several papers on risk factors of CVD in rural and urban subjects [53, 54] and demonstrated that CVD risk factors are more common among South Indians com-

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compared to North Indians [55]. His comments about Late Dr Mildred Seelig [56] indicating her friendship and leadership in nutrition particularly magnesium metabolism were highly appreciated by her as well as several members of the American College of Nutrition. Dr Singh again published the effect of DASH type of diet among hypertensives in 1995 [57]. Dr Singh studied the antioxidant vitamins and oxidative stress among patients coming to him with various noncommunicable diseases including depression, type A behaviour etc, which he published in 1995 [58] which was followed by an editorial in association with the journal, s editor Dr Damien Downing [59]. In association with nutrition scientists from south India, Dr Singh demonstrated the role of diet in hypertension in Indians [60]. He also designed randomized, controlled trial in rabbits on the role of antioxidant vitamins, and cardioprotective-Mediterranean style diet on hyperlipidemia, oxidative stress and atherosclerosis [61] followed by a randomized, controlled trials of antioxidant vitamins and L-carnitine in patients with AMI [62, 63]. As president of the Indian Society of Hypertension and Executive director of the International College of Nutrition, he became a leader in nutrition in cardiovascular diseases, and published diet and lifestyle guidelines for prevention of CVD in India [64] which were supported by further studies [65-68].

In collaboration with experts from India, Japan, Sri Lanka, Iran, China, Korea, Philippines, and Pakistan, Dr Singh published research papers and developed diet and lifestyle guidelines for prevention of CAD in Asia [69-74]. He also developed questionnaires and criteria for assessment of occupational and leisure time physical activity and socioeconomic status and determined classifications for Indians [75]. Dr. Singh conducted the Indian Social Class and Heart Survey and the Indian Lifestyle and Heart Study at Moradabad component of the Five City Study, to validate the questionnaires and to demonstrate the prevalence of CAD, hypertension and their risk factors [76-80]. He developed the questionnaire and classification for assessment of tobacco and alcohol consumption in Indians [81]. In association with 10 other diabetologists from different parts of India, Dr Singh developed the diet and lifestyle guidelines for prevention of diabetes [82]. (He also published some work on diet and cancer [83, 84], fenugreek [85] and triphala [86]. His research involving mustered oil and fish oil in patients with AMI [87] has also shown that w-3 fatty acids can decrease ventricular premature beats, infarct size and heart failure in patients with AMI which was later confirmed by other workers).

Dr. Singh's work on coenzyme Q10 and w-3 fatty acids is widely known [88-96]. His research has thus shown that coenzyme Q10 can decrease lipoprotein(a) and insulin resistance and may be beneficial in motor neuron disease, tuberous sclerosis like neurological conditions [89-93]. The antioxidant coenzyme Q10 has also been shown to decrease proinflammatory cytokines and plasma nitrite level in patients with heart failure, and modulate chronic renal failure. He conducted a five city investigation on the prevalence of coronary risk factors in India which was widely published and reviewed in various leading international journals [97-112] He designed an in vitro experiment showing, that forskolin is free radical inhibiter [113].

He developed the concept of nutritional aspects of circadian rhythm [114] and reported circadian rhythm in antioxidant vitamin deficiency in the second quarter of the day [115]. He reported circadian changes in blood pressure and heart rate among apparently healthy subjects [116] and to review and develop the concept of brain-heart interactions and nutrition [117]. He published the 3rd Landmark randomized, controlled intervention trial, on the role of w-3 fatty acids rich Mediterranean diet in patients with high risk of CAD [118, 119]. He also published mechanisms of AMI and high levels of cytokines in AMI patients consuming heavy breakfast [120, 121]. He coordinated to develop A Scientific statement from the International College of Cardiology, Columbus Paradigm Institute and the International College of Nutrition on the role of wild foods in the prevention of CVD [122]. He published superfoods dietary approaches for treatment of AMI [123]. He proposed the hypothesis of evolution of circadian rhythm in relation to increased secretion of testosterone, catecholamines and cortisol in the morning, may be due to excitement, running and hunting in the morning when animals come for drinking of water at river banks [124]. He reported that treatment with Indo-Mediterranean diet can modulate circadian rhythm of cardiac events indicating brain-heart connection [125]. His further research is in the same direction [126-129] including epidemiology of diet and prehypertension [130].

Dr. Singh has been the author of more than 350 research publications, most of which are in the areas of magnesium, w-3 fatty acids, antioxidants, nutrition and nutraceuticals in relation to the prevention and treatment of heart disease, hypertension, diabetes, CAD and brain-heart connection. He has also written or edited a number of reference texts on Nutrition in Health and Disease, including monographs on hypertension and coronary artery disease. In short, Dr. Singh's name is synonym with the prevention of Arterial Occlusive Disease, as evident by his research in the area generating an outstanding record of research publications and more than 500 invited presentations across the world. His antioxidant formulation for reversal of heart and renal failure has received much recognition as evidenced by him owning 3 patents in the area. Dr. Singh's research work has brought Coenzyme Q10 to our knowledge in terms of its significant role as an antioxidant, anti-inflammatory, antiinsulin resistance, antilipoprotein (La) agent as well as its role in negating side effects of lipid-lowering drugs, such as statin. He has been the editor/Chief editor of a number of periodicals and received numerous international awards. Dr. Singh is the founder of the International College of Nutrition as well as the International College of Cardiology. These two organizations hold world congress annually across the world bringing scientists and professionals from medical and nutritional sciences with an objective of maintaining a strong bridge between the two domains. Recently under the guidance of Dr. Singh, these two colleges published a joint report supporting and justifying the protective effect of some wild foods against cardiovascular disease [122]. Dr Singh's life-time research work has, no doubt, earned him to be a world's leading expert in nutritional factors in relation to cardiovascular disease. His novel research has made a true impact in our understanding of the role of nutrition in health and disease.

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