



## Lessons from our paleolithic primogenitors; a short look to the world diabetes day 2014 with the theme of “healthy living and diabetes”

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The human genetic has changed relatively little since the appearance of truly human being (homo sapiens 40000 years ago). Paleolithic (50,000 BC) ancestors of us were mobile hunter and gatherer, Physical activity was obligatorily for food procurement. Their daily activities covered a broad Spectrum of activities, and analogous to both aerobic conditioning and strength training (1,2). Our ancestors often had periods of feast intermixed with famine. They sometimes starved to death insulin sensitivity, and metabolic regulatory proteins, driven by cycles of feast-famine have molded the selection of “thrifty” genes. During periods of feast, storage of fuel was happened for periods of impending famine. The efficient utilization of that fuel mediates via glucose transporter 4 (GLUT4) and AMP kinase (AMPK) mechanisms allowing fuel extraction in working skeletal muscles. Permitted our ancestors to continue intense physical activity despite a prolonged fasted state (3-5). Human metabolic processes were evolved in the presence of physical activity–rest cycles, which regularly depleted skeletal muscles of their glycogen stores (6-8). Physical activity is no longer a requirement for daily living. Our genes are unable to match the rapidity of cultural change. Mechanisms of our hunter-gatherer ancestors continue to be in operation today. Although there are no true famines or intense physical activity in nowadays human life. It has been shown that hexokinase II and GLUT4 mRNAs did increase in response to a single bout of exercise (7,8). Exercise training increases mitochondrial density in skeletal muscle and enhance the of insulin sensitivity (6-8). We eat many types of foods that were absent from the diet of Paleolithic people; dairy products, cereals, refined sugars and cookies. “What did our ancestors eat?” hunter-gatherers add no or little salt to their food. They obtained their fiber predominantly from fruit and vegetable rather than cereal grains. And sodium intake was in its lowest and came from vegetable (1-5). They ate much less fat than we do and it was substantially different from ours. And it was more essential fatty acid with much higher ratio of polyunsaturated to saturate (1,2,9,10). The mTOR protein kinase has emerged as a critical

### ■ Implication for health policy/practice/research/medical education

Each year, November 14, is celebrated as World Diabetes Day (WDD). WDD is a campaign led by the International Diabetes Federation (IDF) and its associations throughout the world. It is nominated since 1991 in a collaborative campaign by IDF and WHO in response to a worldwide concerns about the graveness of threat. The WDD 2014 campaign marks the first of a three-year (2014-16) emphasis on “healthy living and diabetes”. This activities and materials in these years will particularly be concentrate on the topic of healthy eating that is important both as prevention of and as a applicable management of diabetes complications.

growth-controller, during high nutrient (1-6). Metabolic and immune systems are among the most fundamental requirements for survival and they are interwoven to each other in the face of energy and nutrient deficit, cells down-regulate mTOR to conserve anabolic energy expenditure and vice versa (8-10) with high energy consumption mTOR activation could be the origin of immunologic and proliferative disorders (7-10).

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The relationships between maternal malnutrition, low protein diet, and type II diabetes mellitus have been widely investigated. In fact, diabetes mellitus (DM) is a major non-communicable illness and, a serious communal health problem, while the growing prevalence of DM the proportion of individuals with the disease will double by 2025, and nearly 316 million people are high risk for type II diabetes, and the number anticipated to increase up to 500 million within a generation. What that makes the atmosphere of menacing for this pandemic is its hiddenness and it persists hidden up to half of all individuals with DM globally remain undiagnosed. These data restate the importance of urgent action (3,5,10). The majority of cases of type II diabetes can be prevented and the serious complications of diabetes can be prevented through healthy lifestyles and living environments that encourage healthy behavior. The main messages of WDD sought to raise the alertness of .how the healthy choice can be the easy choice and about what to eat. No food is out of limits but food choices are an important part of the diabetes management. Consuming a balanced diet – that is vegetables and fruit, starchy foods, non-dairy sources of protein and dairy – is something we should do for diabetic individuals. This evidence is a starting point to help the diabetics. However, diabetics should also be referred to a registered dietitian for specific knowledge tailored to their needs. A particular focus however, would be starting the day with a healthy breakfast. Contain carbohydrate, which that more gradually absorbed. Vegetables and Fruits are naturally low in calories and fat (2-6).

Type II diabetes mellitus (T2DM) is a multifactorial disorder, and its etiology involves a complex interaction between genetic, epigenetic, and environmental factors. Since the incidence of DM is increasing the mostly important issue is healthy living. This is a theme of WDD 2014 to emphasis more cooperation of dietitian, endocrinologist and nephrologists to avoid diabetic complications (1-5).

Type 2 diabetes is a consequence of eating of diets to which we are not genetically adapted (1-4). The pattern and type of diet of our remote and ancestors could be a reference for modern human nutrition. Physical activity of hunter-gatherer is analogous to a mixture of aerobic conditioning and intense training. With those implementations we could be close to those situations that we are designed for.

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All authors contributed to the paper equally.

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#### Ethical considerations

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