1. Heart—a muscular organ—is responsible for the pumping of oxygen- rich blood to all the body organs. For that matter, it contains numerous specialized structures to make this function happen. This system is referred to as conduction system of the heart. It contains heart walls that possess numerous specialized cardiac muscle cells for sending powerful signals to the cardiac muscles for initiating the process of contraction. As far as main components of cardiac conduction system are concerned, it encapsulates Purkinje fibers, bundle branches, bundle of His, Sinoatrial nodes (SA nodes) and Atrioventricular nodes (AV nodes). The Sinoatrial (SA) nodes are termed as anatomical pacemakers because they help initiating the process of contraction through creating a sequence with the help of atrial muscles. The next destination of signals is Atrioventricular (AV) nodes present in the right atrium; from where they travel to the bundle of His, bundle branches, Purkinje fibers and reach the ventricle and cause it to contract. The blood moves into the prospective apartments soon the walls are contracted. Due to these systematically roaming signals, electrical current is produced—the whole activity can be manifested on the Electrocardiogram of ECG. Conduction system’s electrical activity is monitored through ECG in order to detect any cardiac malfunctioning (Park & Fishman, 2014).

2. Sinoatrial nodes (a mass of specialized cells present in atrium) start the electrical signals through contraction. Soon after it contracts atrium walls (both right and left chambers), the electrical signals move to the Atrioventricular nodes present at the junction of atrium and ventricle. Bundle of His is present in the ventricle where it is divided into two pathways forming bundle branches; the electrical signals reach there and pass to the left and right ventricles—causing them to contract. Hence, the blood is pumped based on the contractions of atria and ventricles. Interestingly, generation of electrical signals follow rhythmic patterns due to which rhythmic contraction and relaxations of the heart are coordinated. It is important to note that under normal conditions, the sinoatrial node initiates the electrical signals regularly with the rate of 60 to 100 times per minutes. Moreover, the generation of electrical impulse starts from the atrium hence both the atria contract prior to the conduction at ventricles. One heartbeat is represented by the each contraction of ventricles. Soon after atria are contracted, their blood immediately empties into ventricles therefore there can be seen a slight pause between the contraction of atria and ventricles. Dysfunction of cardiac conduction system is potent enough to create intermittent heart rhythms which can be seen on the ECG (Paff et. al., 1968).

3. Vitamin B12 is usually attained from animal sources including milk, milk products, eggs, poultry, meat and fish. It is generally absent in plant foods (Herbert, 1996).

4. Vitamin B-12 is extraordinarily significant in the normal functioning of body particularly for the brain and nervous system. It strengthens the conductive ability of neurons. Moreover, it is responsible for the formation of Red Blood Cells and DNA synthesis and regulation. Cellular metabolism takes place in the presence of Vitamin B-12 and it also plays significant role in the production of Fatty Acids and energy (Herbert, 1996).

5. In the pregnant women, Vitamin V-12 crosses the placenta and helps in the development of embryo. It performs numerous functions right there including the strengthening of neural connections, regulation and synthesis of DNA, formation of Red Blood Cells, production of Fatty acids and energy (Combs, 1992). It is also present in the breast milk. Since, animal sources are enriched with this Vitamin, it is important for the mother to take animal sources during pregnancy. If she fails, child may develop problems associated with the above mentioned functioning. Other than the pregnant women, its deficiency may cause fatigue, weakness, constipation, anemia, weight loss, depression, dementia, confusion, difficulty maintaining balance and soreness of mouth (Combs, 1992).

6. Vegetarians are at the higher risk of getting Vitamin B-12 deficiency because they only eat vegetables, fruits and pulses; eliminating the consumption of meat, fish or related products. Since, animals are the rich sources of Vitamin B-12; these groups are at higher risk of developing above mentioned deficiency related problems (Herbert, 1996).

References

Combs G. Vitamin B12 in The Vitamins. New York: Academic Press, Inc., 1992.

Herbert V. Vitamin B12 in Present Knowledge in Nutrition. 17th ed. Washington, DC: International Life Sciences Institute Press, 1996.

Paff G.H., Boucek R.J., Harrell T.C. Observations on the development of the electrocardiogram. Anat. Rec. 1968;160:575–582. doi: 10.1002/ar.1091600306.

Park D.S., Fishman G.I. In: Cardiac Electrophysiology: From Cell to Bedside. Zipes D.P., Jalife J., editors. Elsevier; Philadelphia, PA, USA: 2014. pp. 287–296.