Prof ANIL KUMAR zoology
B.Sc HONS Part -III Paper - V
Topic:- Write short Notes on:
1. Fatty acid
2. Electro cardiograph (ECG)
3. Blood clotting
4. Rh-factor

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1. Fatty acid A hydrocarbon chain having single carboxyl group (–COOH) at one end is known as fatty acid. It is represented by general formula $CH_3(CH_2)n\ COOH$. The Carbon atoms are numbered from the carboxyl end.

Fatty acids may be saturated and unsaturated. Fatty acids having two hydrogen atoms linked to every Carbon of the hydrocarbon chain are known as saturated fatty acids. There is no double bond between Carbon atoms in saturated fatty acids. These are solid in nature. Ex–Palmitic acid ($CH_3(CH_2)_{14}\ COOH$), Steasic acid ($CH_3(CH_2)_{16}\ COOH$), acetic acid (CH_3COOH), butyric acid (CH_3CH_2COOH) etc.

Fatty acids having one or more double bonds between Carbon of hydrocarbon chain are known as unsaturated fatty acids. These are in liquid state. Depending upon the number of double bonds these are designated as—monoenoic (having single double bond), dienoic (having two double bonds), trienoic (having three double bonds), tetranoic (having four double bonds), pentaenoic (having five double bonds).

Ex–Oleic acid $(CH_3(CH_2)_7CH = CH\ (CH_2)_7\ COOH$,

Linoleic acid $(CH_3(CH_2)_4CH = CH = CH\ (CH_2)_4\ COOH)$

fatty acids are essential and non-essential. The fatty acids those are not synthesized in body are called essential fatty acids. These fatty acids should be taken from outside in diet. Ex—Linoleic acid, Linolenic acid.

The fatty acids those are synthesized body are not essential to be taken in diet. These fatty acids are called non-essential fatty acids.

Ex—Palmitic acid, Stearic acid etc.

The deficiency of essential fatty acids results in retarded growth, reproductive deficiency and kidney failure. Fatty acids combine with glycerol form the lipid.

Electro Cardiograph (ECG)–The automatic rhythmic contraction (systole) and relaxation (diastole) of the heart constitute a cardiac cycle (heart beat). The Cycle initiates with the contraction of the pace maker.

The electrical changes accompanying the cardiac cycle recorded on a graphic record by placing electroles on the skin on opposite sides of the heart and connecting the electrodes to an instrument is called electro cardiography. The technique of recording is termed electro-cardiography and the recorded linear graph is termed electrocardiogram (ECG). ECG is first discovered by Eintho-ven.

A normal ECG is composed of a P wave a QRS wave complex and a T wave.

(i) P-Wave–It is a small upward wave caused by the electrical currents generated by deporalisation of atria.

(ii) QRS Wave Complex–It is a deflection wave, begins as a downward deflection, continues as a large, upright, triangular wave and terminates as a downward wave at itbase. It is caused by currents generated due to depolarisation of the ventricles prior to contraction.

(iii) T-Wave–It is a smooth upright dome-shaped wave. Its limbs are asymmetrical as peak lies near the end. It is caused by currents generated by the repolarisation of the ventricles which occurs 0.25 to 0.35 second after their depolarisation.

P–P interval denotes atrial rate

R–R interval denotes ventricular rate.

ECG shows the diseases of heart like heart block, tachycardia, angina pectoris.

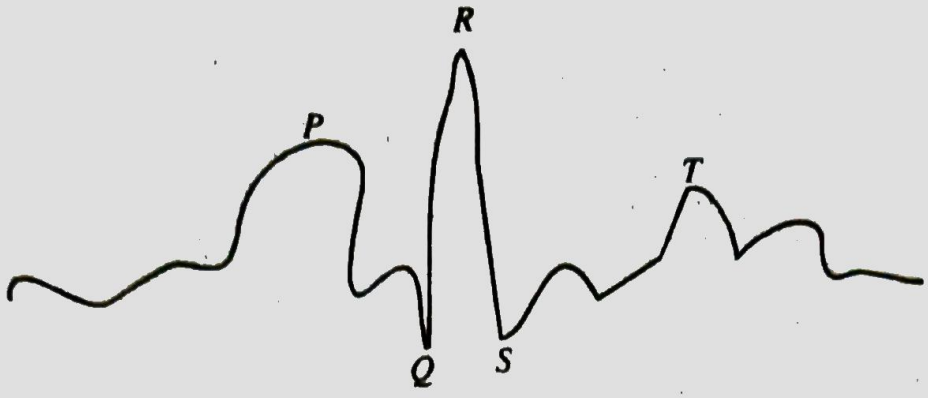

Fig. Showing ECG.

3. **Blood Clotting**–The blood oozes in cut wound or wound. The injured blood platelet cells release an enzyme known as thromboplastin or thrombokinase. This enzyme reacts on prothrombin and converts into thrombin in presence of Ca^{++}.

Thrombin converts soluble fibrinogen into insoluble fibrous structures, fibrin. Fibrins form net like structure in which blood corpuscles entangle and form blood clot. Then blood oozing stoped. This is described by Fuld and spiro.

Injured blood platelets—release–Thromboplastin (an enzyme)

Prothrombin (Inactive) $\xrightarrow{\text{Thromboplastin}}$ Thrombin (Active)

Fibrinogen (Soluble) $\xrightarrow{\text{Thrombin}}$ Fibrin (Insoluble)

4. **Rh-factor**–Rh-factor is discovered by Land Steiner and weiner in 1940.

A type of antigen is discovered in RBCs of Rhesus monkey and hence named Rhesus factor or Rh factor. Later on Rh-factor is seen in RBCs of human beings also Rh-factor is not present in all human beings. About 80% peaples have Rh-factor. The person with Rh-factor is called Rh^+ blood and without Rh-factor is called Rh^- blood.

On the basis of antigens A, B & Rh factor the blood groups are :—

A^+, B^+, AB^+, O^+

A^-, B^-, AB^- & O^-.

O^- is universal donor.

The gene controlling this factor is dominant. Differentce in Rh groups of parents create problem for babies. There is no problem if both parents have same Rh group.

If father is Rh^+ and mother is Rh^- then the foctus will contain Rh^+ blood. This will create problem. In this problem the foctus will abort. Therefore, Rh^+ man should not be married to Rh^- woman. If does then erythroblastosis foctalis will occur.