

Parthenogenesis

2. Artificial Parthenogenesis:

It is development of eggs without fertilisation into the young individuals under certain artificial conditions. It may be induced by various chemical and physical means.

A. Physical means:

The following physical means cause the parthenogenesis:

(i) Temperature: parthenogenesis induced by temperature. For example, when the egg is transferred from the 30°C to 0-10°C, the parthenogenesis is induced.

(ii) Electrical shocks can induce parthenogenesis.

(iii) Ultraviolet light can induce parthenogenesis.

(iv) When the eggs are pricked by the fine glass needles the development of young ones takes place parthenogenetically.

B. Chemical means:

The following chemicals are known to cause parthenogenesis in the normal eggs:

1. Chloroform

2. Strychnine

3. Hypertonic and Hypotonic sea waters

4. Chlorides of K^+ , Ca^{++} , Na^+ , Mg^{++} , etc.;

5. Acids such as butyric acid, lactic acid, oleic acid and other fatty acids

6. Fat solvents, e.g., toluene, alcohol, benzene and acetone

7. urea and sucrose

The artificial parthenogenesis has been induced by above mentioned physical and chemical means by various workers in the eggs of most echinoderms, molluscs, annelids, amphibians, birds and mammals.

Significance of Parthenogenesis:

1. The parthenogenesis serves as the means for the determination of sex in the honey bees, wasps, etc.

2. It supports the chromosome theory of inheritance.

3. It is the most simple, stable and easy process of reproduction.

4. It eliminates variation from populations.

5. It is the best way of high rate of multiplication in certain insects, e.g., aphids.

6. It causes the polyploidy in organisms.

7. It encourages development of the advantageous mutant characters.

8. It checks the non-adaptive combination of genes which may be caused due to the mutation.

10. It avoids the sterility in the races.

However, the individuals produced due to parthenogenesis are not much successful in the struggle for existence because of no recombination of genetic material, hence, no production of variations.