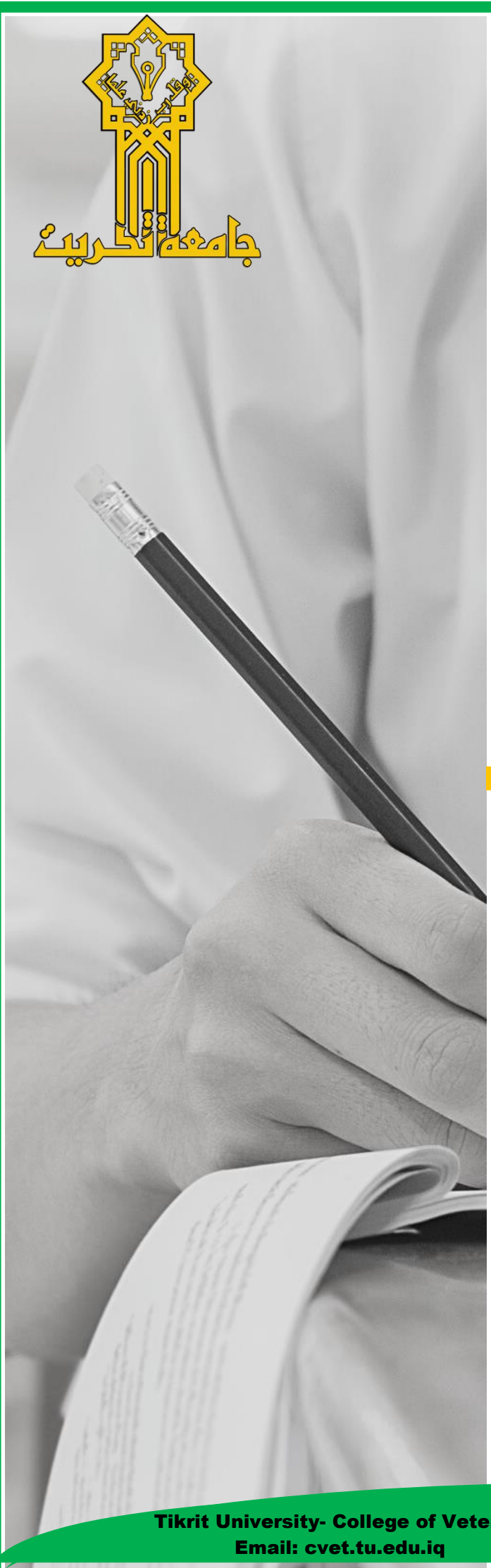

Tikrit University
College of Veterinary Medicine

Diseased Caused By Nutritional Deficiencies

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Diseased Caused By Nutritional Deficiencies

Introduction

❖ **Criteria are suggested for the assessment of the importance of nutrition in the etiology of a disease state in animals:**

- Examination of the diet that deficiency of a specific nutrient.
- Evidence from an examination of the animal, that a deficiency could cause the observed disease.
- Dose supplementation of the diet prevent or cure the condition?

❖ **Evidence of existent of deficiency (Causes of deficiency):**

Deficiency in the diet, abnormal absorption, utilization, and requirement of the nutrient under conditions

1- Diet:-

The body stores of most dietary factors may delay the appearance of clinical signs.

- Special specific deficiency associated with soil types.
- Heavy application of nitrogen fertilizer can reduce copper, cobalt, molybdenum and manganese in pasture.
- Application of lime. Cause reduce plant copper, cobalt, zinc and manganese and increase in the molybdenum.
- Drying immature forage tend to conserve vitamin A but result in deficiency of vitamin D.

2- Abnormal absorption:-

- Excess phosphate result to decrease in Ca absorption.
- Excess calcium lead to decrease iodine absorption.
- Absence of bile salts lead to decrease absorption of fat soluble vitamins.
- Chronic enteritis lead to reduce absorption of most dietary essentials.
- Calcium interferes with absorption of fluorine, lead, zinc and cadmium but also reduce there toxic effects.

3- Abnormal utilization of ingested nutrients:-

- Molybdenum and sulfate reduce copper storage.

- Vitamin E has sparing effect on vitamin A.
- Thiamin reduce the requirements of essential fatty acid.

4- Abnormal requirements:-

- Stimulation growth
- Pregnancy
- Lactation

❖ **Evidence of a deficiency as the cause of the disease (Diagnosis of deficiency):**

- Evidence is usually available from experimental works to indicate the clinical signs and necropsy findings.
- Special clinical signs and laboratory examination of the animals are valuable aids to diagnosis.

  EX. Impaired night vision is a good indication of vitamin A deficiency.
- Radiographic examination of joint in rickets.
- Electrocardiographic examination in thiamin and vitamin E deficiency.
- Levels of most nutrients in blood , urine and liver.

❖ **Evidence based on cure or prevention by correction of the deficiency:**

- It is consider to be the best diagnostic test in suspected nutritional deficiency is to observe the effects of specific additions to the ration and it is effect.
- Curative response may be poor because of an in adequate dose rate or because of advance tissue damage.
- Spontaneous recovery.
- Complication with other factors.
- The preparation used may have intrinsic pharmacological activity and produce some amelioration of the disease without deficiency having been present.

Deficiencies of Energy and Protein

❖ **A deficiency of energy** is the most common nutrient deficiency limiting performance of farm animals. Its result from:

1- Inadequate amounts of feed available.

2-The feed may be of low quality and digestibility that animals cannot consume enough to meet energy requirements.

3- Supplies of feed may be inadequate because of overgrazing, drought, snow covering, or it may be too expensive to be fed to the animals.

4- Forage may contain a high concentration of water, which limits total energy intake.

Clinical findings in an energy deficiency will be depend on:

1-The age of the animal

2-Whether or not it is pregnant or in lactation

3-The presence of concurrent deficiencies of other nutrients

4-Environmental influences.

In general, insufficient supply of energy results in (clinical signs)

1- Retarded growth

2- Delay in the onset of puberty.

3-Decline in milk production and a shortened lactation.

4-Insuficient produce of colostrum at parturition

5-Loss of body weight specially at late pregnancy and early lactation.

6-There are prolonged periods of anestrus, which has a marked effect on reproductive perfonnance in the herd.

7-A prolonged deficiency of energy during late gestation may result in undersized, weak neonates with a high mortality rate.

8- Abomasal impaction during prolonged periods of cold weather, on poor quality roughage.

9-Hyperlipemia occurs in fat, pregnant or lactating ponies that are depending on a falling plane of nutrition

11-A sudden dietary deficiency of energy in fat, pregnant beef cattle and ewes can result in starvation ketosis and pregnancy toxemia.

10-Weakness, recumbency and death.

- A **Protein Deficiency** is commonly occur in associated with energy deficiency.

Clinical signs

1- Reduce appetite

2-Inferior growth rate

3-Lack of muscle development

4-Prolonged time to reach maturity

5-Decrease milk production

- Clinical pathology: decrease hemoglobin concentration, PCV, and total serum protein.

Diagnosis

The diagnosis will depend on clinical signs

1- Estimation of the concentration of energy and protein in the feed,

2-Feed analysis, and comparing the results with the estimated

3-Marginal deficiencies of energy and protein may be detectable with the aid of a metabolic profile test.

Treatment

1- Specific treatment of livestock affected with protein-energy malnutrition is usually not undertaken because of the high cost and prolonged recovery period.

2- Oral and parenteral fluid and electrolyte therapy can be given.

3-The provision of high-quality feeds appropriate to the species is recommended.