

## Hepatic Tissues under the Effect of Dexamethasone: Histological Study, Dose and Duration Related Changes

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### Abstract

- Background** Dexamethasone is a highly potent glucocorticoid. Treatment with dexamethasone results in several metabolic perturbations on nearly all organs of the body including the liver.
- Objective** This study had been carried out in order to investigate the effects of dexamethasone sodium phosphate as synthetic form of glucocorticoids on the rabbit liver as a model for human liver, by a light microscope, using two extreme of doses and two durations to show the dose and duration dependency.
- Methods** Liver specimens were obtained from rabbits treated with dexamethasone sodium phosphate and from control groups 1 and 2, the specimens were fixed and processed to evaluate the histological and histochemical changes.
- Results** Vacuolation and ballooning of hepatic cells were observed in the liver of the treated groups associated with degenerative changes of these cells, dilatation and congestion of central hepatic vein and sinusoidal capillaries were observed, positive periodic acid schiff's stain (PAS) reactions were noticed in the treated groups. All these changes were dose and duration related.
- Conclusion** Morphological changes induced in the liver by dexamethasone sodium phosphate could be accepted as side effects of these drugs.
- Key words** Liver, dexamethasone, histology, glycogen.

### Introduction

The liver is a vital organ for processing nutrients absorbed from the gastrointestinal tract and for transforming them into materials needed by other tissues of the body <sup>(1)</sup>. It is under the influence of many hormonal actions such as insulin <sup>(2)</sup>, glucagon <sup>(3)</sup> and the adrenal steroids <sup>(4)</sup>. The synthetic glucocorticoids are administered for a variety of disorders and illnesses, but their administration may be associated with development of multitude of complications involving almost all organ systems. The degree of complications depends on a number of factors, including length of treatment, time of day of administration, glucocorticoid

preparation chosen, route of administration, dose administered and dosing intervals <sup>(5)</sup>.

Dexamethasone is a potent glucocorticoid that is indicated for a wide range of diseases such as endocrine and non-endocrine diseases including rheumatoid arthritis, osteoarthritis and other connective tissue diseases and also indicated for inflammatory diseases such as respiratory disease, dermatological diseases etc. However, dexamethasone has wide spectrum of side effects on nearly all the body systems <sup>(6)</sup>.

Serum corticosteroid-binding protein, transcortin, has been considered to be synthesized and secreted by liver cells <sup>(7)</sup>. Transcortin is involved in the selective transfer