Effect of Hesperetin on Morphological Parameters of DHEA-induced PCOS Female Mouse Model

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The development of suitable animal models of PCOS has become a key area of research to further understand the etiology of PCOS disorders, which is often found in women of reproductive age. PCOS has become one of the most common causes of menstrual and reproductive dysfunction, which can lead to infertility. Clomiphene citrate is a standard drug used as first-line option for the induction of ovulation in women; however its long-term use could cause serious adverse effects. Therefore, bioflavonoids are now considered as potential therapeutics that can be used in the treatment or prevention of various diseases with low adverse effects. In the current work, we investigated the potential of hesperetin (HSP) to modulate some endocrine and metabolic parameters in a polycystic ovarian condition induced by hyper androgenization with DHEA in C57Bl/6 mice. Effect of HSP on the morphological micrographs of the liver, kidney and heart tissues is examined in the current work. The morphological observation of liver sections in all groups showed a normal hepatic architecture with normal hepatocytes, normal sinusoidal spaces and a central vein. There was no abnormalities or histological changes in the liver of mice treated with HSP at different doses (5, 10, 25 and 50 mg/kg/day), as well as LET and CC. On the other hand, the histological examination of heart sections of all groups showed the cardiac muscle, the myocardium constituted of cross-striated muscle cells, cardiomyocytes with one centrally oval single nuclei. No abnormality in histology of the heart was observed in all experimental groups as seen under microscope. No changes were found in cardiomyocytes after treatment with HSP at doses up to 50 mg/kg/day for 30 consecutive days. Similarly, histological micrographs showed that the kidney of all groups had normal renal structure of cortex, which showed normal histological structures of the glomeruli surrounded with Bowman’s space, and renal tubules in the cortical and medullary portions without any inflammatory changes. All these results demonstrated that HSP can be administered intraperitoneally up to 50 mg/kg/day for 30 consecutive days without notable adverse effect on liver, heart and kidney which therefore warrants its safe usage in the treatment of DHEA-induced PCOS mouse model.

All these results highlighted that HSP at 5, 10, 25 and 50 mg/kg for 30 days restored the morphology of ovary and ameliorated hormonal changes without any adverse effect on liver, heart and kidney. It therefore suggests that HSP can be further explored as an alternative treatment for the alleviation of major disturbances observed in PCOS. However, further studies are needed to confirm therapeutic effects of HSP. Transgenic mice rewarded with DHT speak to the third era of PCOS models and can be utilized to examine the unthinking reason for the PCOS phenotype actuated by hormonal treatment. Discoveries from considers utilizing these creature models can give significant and novel bits of knowledge into the pathophysiology of PCOS in people.