CHANGES IN HUMAN BREAST PROTEOGLYCANS AND FIBROADENOMA WITH MENSTRUAL CYCLE

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Proteoglycans are important constituents of the cell surface and extracellular matrix. Many properties of the tissues depend on the glycosaminoglycan moiety of the proteoglycans. Changes in the structure and concentration of proteoglycans correlate with changes in physiological and pathological conditions, and tumors are good examples. Increased concentration of chondroitin sulfate has been reported in many types of tumors. In human leiomyoma, increased synthesis and glycosylation of the protein core, with modified glycosaminoglycan chains were reported, suggesting that both the expression of the protein core and its glycosylation are under a complex system of controls by both systemic hormonal and local factors. The aim of the present study was to characterize the proteoglycan profile in human normal breast tissue and fibroadenoma during the menstrual cycle. Human normal and fibroadenoma tissue samples were maintained under tissue culture conditions for 24 h, and the proteoglycans synthesized were labeled with ^{35}S-sulfate. These compounds were analyzed by a combination of agarose gel electrophoresis and enzymatic degradation. Fibroadenoma samples synthesized more chondroitin sulfate than normal breast tissue during all the menstrual cycle, but the differences were much higher during the first half of the cycle. Furthermore, increased proteoglycan synthesis occurred also in normal breast tissue during the first half of the cycle, as compared to the second half. These results suggest that the hormonal state does affect the expression of proteoglycans, both in normal and in tumoral breast tissue.

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