

# Microcalorimetric Investigation of Collagen Stability at Norm and Pathology of Cartilaginous Tissue

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DSC investigations of cartilaginous tissue of norm and sick patients, from 2 to 38 years old, are carried out. It was shown that the process of thermal denaturation is characterized by one intensive peak near to 65 °C and weak diffusion peaks of heat absorption at about 78 and 92 °C, in the case of norm (fig.1a). In the case of pathology, the picture is more complicated (fig.1b). The integral heat absorption is equal to  $12.5 \pm 0.6$  and  $11.9 \pm 0.6$  cal/g of dry biomass, in the cases of cartilaginous tissue of traumatized patients (norm) and pathology, respectively. Deconvolution of presented curves on elementary Gaussian constituents gave four transition stages for norm with  $T_d$  (66,0; 68.1; 71.7; 92.5 °C) and five ones, in case of pathology (60.1; 61.5; 62.2; 86.4; and 92.0 °C).

As it is seen from the presented data, in the case of pathology, all maximums, corresponded to the deconvolution peaks, are decreased to low temperatures, relatively to the norm. It was shown that all observed peaks of heat absorption (fig.1a,b) correspond to collagen fibers denaturation with different packing density.

Calorimetric investigations were carried out on DSC with sensitivity  $10^{-7}$  cal/sec, volume of measuring cells is 0.3 ml (determination of dry biomass see in "Biomacromolecules", 3, 415-420).

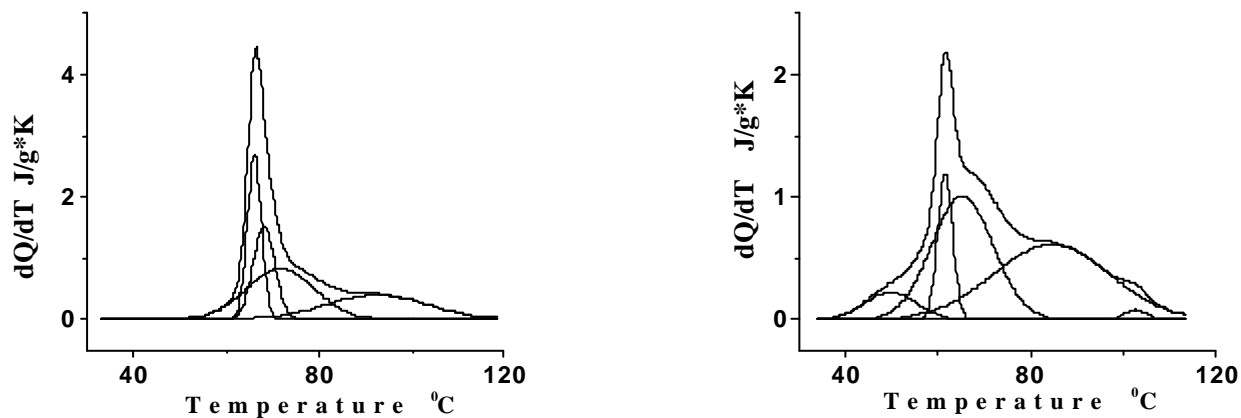


Fig.1. Heat absorption curves, counting on gram of dry biomass: a) norm, b) pathology