The thermostability of DNA-binding protein HU from bacilli.

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The primary and tertiary structures of DNA-binding protein HU from Bacillus stearothermophilus are already known. The primary structure has been previously determined for HU from the closely related B. globigii and the determinations of the sequences from B. caldolyticus and B. subtilis are described here. These bacteria have optimum growth temperatures of greater than 70 degrees C (B. caldolyticus), 65 degrees C (B. stearothermophilus), 37 degrees C (B. subtilis) and 30 degrees C (B. globigii). In vitro measurements from circular dichroic spectra described here give Tm values reflecting these growth temperatures, of 68, 64, 43 and 41 degrees C respectively. We discuss here the relative thermostability of the four proteins in terms of the amino acid differences between the sequences and the three-dimensional model of the B. stearothermophilus HU. The current model for the interaction of the protein with DNA is only discussed in terms of its relevance with regard to thermostability.

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