

RNA-Binding Properties of a Citrus High Mobility Group (HMG) Protein Associated with Transcriptional Control.

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We have identified a citrus HMG (high-mobility group) protein as an interactor of one of the effector proteins from *Xanthomonas citri*, the causal agent of citrus canker. The *Citrus sinensis* protein (CsHMG) belongs to the plant HMGB family. Members of this protein family have one conserved HMG box required for DNA bending and assembling of DNA-nucleoprotein complexes. CsHMG is highly similar to the *Arabidopsis thaliana* HMGB1, involved in plant growth and stress tolerance. The citrus protein has a central structured HMG box flanked by an acidic DE-rich C-terminal and a basic K-rich N-terminal, both predicted to be unfolded. To gain insights into the structure and function of this protein, CsHMG was expressed in *E. coli* as a 6x-His tagged protein and purified by affinity and ion-exchange chromatography. The purified protein was used to perform biophysical and NMR studies. Circular dichroism spectroscopy and NMR studies confirmed the initial secondary structure predictions. Functional analysis using EMSA assays with the recombinant forms of the protein revealed that CsHMG binds to DNA unspecific ally. Surprisingly however, CsHMG shows the ability to bind to single strand poly-U RNAs with greater specificity, a feature that has not yet been reported by any member of the HMGB family. These observations lead us to propose that CsHMG may be involved not only in the transcriptional control but also stabilization of specific mRNAs associated with canker development.

Keywords: *Citrus sinensis*, EMSA, HMG-box
Supported by: FAPESP, CNPq and LNILS.