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Υ and **\boldmath**{ η_b } mass shifts in nuclear matter and the nucleus bound states

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We estimate for the first time the mass shifts (scalar potentials) in symmetric nuclear matter of the Υ and η_b mesons using an effective Lagrangian approach, as well as the in-medium mass of the B^* meson by the quarkmeson coupling model. The attractive potentials of both Υ and η_b are expected to be strong enough for these mesons to be bound in various nuclei, and we have obtained such nuclear bound state energies. A detailed analysis on the BB, BB^* , and B^*B^* meson loop contributions for the Υ mass shift is made by comparing with the respectively corresponding DD, DD^* , and D^*D^* meson loop contributions for the J/Ψ mass shift, in order to investigate how similar are the strengths of the interactions of bottomonium and charmonium to nuclear matter. In addition, initial studies are made to test the effects of different types of form factors and coupling constant values used in the calculation.

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