A new 6a-hydroxylated pterocarpan, named hildecarpin, has been isolated from the healthy roots of *Tephrosia hildebrandtii*. It has been assigned the structure (−)-3, 6a-dihydroxy-2-methoxy-8, 9-methylenedioxypterocarpan on the basis of its spectroscopie data, optical rotation and chemical transformations. Hildecarpin has exhibited insect antifeedant activity against the legume pod-borer *Maruca testulalis*, an important pest of the cowpea *(Vigna unguiculata)*, and antifungal activity against *Cladosporium cucumerinum*. This finding suggests that the pterocarpan phytoalexins formed as a result of microbial infection of the cowpea plant may constitute a basis for induced resistance in the plant against *M. testulalis*.