Thanks to the specific electronic structure the rare earth-based compounds, especially those containing Yb, Ce or Eu, often exhibit exceptional magnetic properties. In our study we have focused on cerium-based compound Ce_2Pd_2In belonging to the family of R_2T_2X compounds crystallizing in Mo_2FeB_2-type structure. Previous studies revealed presence of two magnetic phase transitions ($T_C \approx 4.1$ K and $T_N \approx 4.5$ K) and strong dependence of magnetic ground state on the changes of chemical composition. We carried out detailed ambient pressure characterization so as to expand our knowledge about this interesting system and to refine some previous results, especially the positions of phase transitions were newly determined as $T_C \approx 4.16$ K and $T_N \approx 4.65$ K and Ce magnetic moment was found to reach the value of 1.87 μ_B/Ce. However, the main tool used in frame of the thesis is application of mechanical pressure (both hydrostatic and uniaxial) which allows us to affect the interatomic distances and thus also the related physical properties without the composition change. It was found that antiferromagnetic phase remains to significantly lower temperatures under applied pressure, while changes in T_N are not so significant. Both types of pressure lead to lowering of Ce magnetic moment due to possible Kondo interaction.