Acetyl phosphorylazides, with the general formula $RC(O)ONHPO(O)R'$, have been recently considered due to their antibacterial activity [1], their coordination chemistry [2] and having a decisive role in catalytic and metabolic processes [3]. Phosphoramidates of the general formula $RC(O)ONHPO(O)R_2$ are potential O,O'-donor ligands for metal coordination, particularly for lanthanide ions.

Following the previous works about carbacylamidophosphates with a $\text{C}(\text{meO})\text{N}(\text{H})(\text{O})\text{C}(\text{H})_2\text{(4-P)}\text{[HN(C)(CH)]_2}$ skeleton such as $\text{P}(\text{O})\text{[NHC(O)C}(\text{H})_2\text{R}(2,6-\text{P})\text{[HN(C)(CH)]_2}]$ [3], here, we report the synthesis and crystal structure of title compound $\text{P}(\text{O})\text{[NHC(O)C}(\text{C}(\text{H})_2\text{R}(2,6-\text{P})\text{[HN(C)(CH)]_2}]$. This compound appears as two crystallographically independent molecules (A and B) in each one, the two intermolecular $\text{P}^\cdots\text{O}^\cdots\text{H}^\cdots\text{N}_{\text{me}}$ and one $\text{C}^\cdots\text{O}^\cdots\text{H}^\cdots\text{N}_{\text{me}}$ HBs are responsible to connection of the molecules together as 1-D chains. This result was opposite to that commonly observed for carbacylamido phosphates which show a tendency zwitterionic group rather than the carbonyl counterpart to form hydrogen bond within more acidic NH of $\text{C}(\text{O})(\text{NH})\text{C}(\text{H})_2\text{R}$ skeleton, whereas, the NH of $\text{NH}_2\text{R}^\cdots$ unit is hydrogen-bonded to C(0). Molecules A and B are very close to each other from a structural point of view. The phosphoryl and carbonyl groups are anti to each other and the phosphorus atom has a distorted tetrahedral configuration. The bond angles around the P atom are in the range of $107.11(8)^\circ$ to $114.81(5)^\circ$. The $\text{P}^\cdots\text{O}$ bond lengths of $1.58(4)$ Å for A and $1.48(4)$ Å for B are shorter than the $\text{P}^\cdots\text{N}_{\text{me}}^\cdots\text{O}^\cdots\text{N}_{\text{me}}^\cdots\text{P}^\cdots\text{O}$ bond lengths of $1.67(3)$ Å for A and $1.63(3)$ Å for B.

References:
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Synthesis and crystal structure of N-(2-fluorobenzoyl) N,N'-dipropylphosphoramic triamide
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Carbacylamidophosphates with a $\text{C}(\text{O})(\text{NH})\text{PO}(\text{O})\text{C}(\text{H})_2\text{[HN(C)(CH)]_2}$ skeleton have attracted attention because of their roles as the O,O'-donor ligands for metal coordination [1]. Following the previous works about carbacylamidophosphates such as preparation of $\text{P}(\text{O})\text{[NHC(O)C}(\text{H})_2\text{R}(2,6-\text{P})\text{[HN(C)(CH)]_2}]$.