

ABSTRACT:

The present report deals with the results of studies involving synthesis of two new polymer-anchored peroxo(VI) compounds of W(VI) and V(V), viz., Na[WO(O₂)₂(sulfonate)]-PVS (**PSW**) and Na₂[VO(O₂)₂(sulfonate)]-PVS (PVS = polyvinyl sulfonate), (**PSV**) from the reaction of H₂WO₄ or V₂O₅ with H₂O₂ and the polymeric ligand at pH *ca.* 5. The compounds were characterized by elemental analysis (CHN and EDX analysis), spectral analysis (IR, UV-Vis and ¹³C NMR), thermal (TGA-DTG) as well as scanning electron micrographs (SEM) and EDX analysis. It has been demonstrated that the compound **PSW** and **PSV** retain structural integrity in solutions of a wide range of pH values and is approximately 20-30 times weaker as substrate to the enzyme catalase relative to H₂O₂, its natural substrate. The effect induced by the compound **PSW** on two different membrane bound phosphatases viz., wheat thylakoid membrane acid phosphatase (ACP) and rabbit intestine alkaline phosphatase (ALP) has also been investigated. It has been observed that the IC₅₀ and K_i values were more than 50 orders of magnitude lower for ACP than those observed for ALP. The mode of inhibition by the compound on both the phosphatase enzyme is found to be non-competitive in nature.