

Stimulatory effect of DIMBOA on NADH oxidation catalysed by horseradish peroxidase

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2,4-Dihydroxy-7-methoxy-1,4-benzoxazin-3-one (DIMBOA) effectively enhanced the rate of NADH oxidation catalysed by horseradish peroxidase isoenzyme C (HRPC), a reaction that generates H₂O₂. The effect showed saturation kinetics with increasing DIMBOA concentrations and the extrapolated maximum rate gave an activating factor of 246 for this hydroxamic acid. After 80% of the NADH had been oxidized, DIMBOA had converted into a species that showed absorption bands centered at 430 and 345 nm. A product with the same absorption properties was formed upon oxidation of DIMBOA with H₂O₂. The V(max) for the latter reaction was 3.3 times lower than the maximum rate of NADH oxidation in the presence of DIMBOA. Ferulic and p-coumaric acids were also stimulators of NADH oxidase activity of HRPC, giving saturating kinetics. Maximum rates obtained for these effectors give activating factors of 35 and 1170, respectively. The DIMBOA analogue 2,4-dihydroxy-1,4-benzoxazin-3-one (DIBOA) that lacks the meth