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MEETING ABSTRACTS

COPPER-DEPENDENT HYDROLYSIS OF TRICHLORONATE BY TURKEY SERUM AND ALBUMIN

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Trichloronate is a racemic organophosphatioate insecticide. It induced delayed neuropathic in hens and human. The avian are species with greater susceptibility to organophosphorus poisoning due to their low levels of A-esterases. However, a copper-dependent hydrolyzing activity of hexyl dichlorophenyl phosphoramidate (HDCP), known as "antogonistic stereoselectivity" was recently identified in chicken serum. This study shows the activating effect of copper on the hydrolysis of trichloronate enantiomers by turkey serum and albumin (TSA) using chiral chromatography with CHIRALCEL OD column and heptane HPLC as mobile phase. The trichloronate hydrolysis levels (μM remaining concentration of each isomer) quantified at 37 °C, pH 7.4 and 60 minutes of turkey serum (10 μL) incubated with 300 μM of copper were statistically higher $p<0.05$) for (-)-trichloronate (65 %) than (+)-trichloronate (32%). This estereoselective hydrolysis observed in turkey serum was confirmed by the incubation of 200 μg of turkey serum albumin (amount of this protein estimated in the 10 mL of turkey serum) with 400 μM of racemic trichloronate and 300 μM of copper at physiological condition during 60 minutes; hydrolysis values of 90% and 72% were obtained for (-)-trichloronate and (+)-tricholoronate. In conclusion, the present study evidences the hydrolysis of an organophosphatioate racemic for an A-esterase activity in turkey serum and identifies albumin as the cuproprotein responsible of this Cu^{2+}-dependent stereoselective hydrolysis of this chiral insecticide in the turkey serum.

Keywords: trichloronate; chiral organophosphatioate; hydrolysis; turkey; albumin; serum