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Acute Toxicity of Self Nano-emulsifying Formulation of Curcumin Analogue Gamavuton-0, A New Candidate for Rheumatoid Arthritis Treatment

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Abstract : Gamavuton-0 (GVT-0), a newly developed compound synthesized by a carbonyl group and a methylene reduction of Curcumin, has been proven to have several anti arthritic activities. The compound has been further proven to have no short-term toxicity in rat *in vivo*. However, GVT-0 still burdens low water solubility therefore poorly absorbed in oral administration. Currently, a self-nano-emulsifying system has been developed to formulate GVT-0 into a more effective oral anti RA candidate using various oils and surfactants (SNE GVT-0). To study whether this formulation would not alter the safety of the compound in oral administration, an *in vivo* acute toxicity testing was conducted. A 14 day-study was performed by using four groups of wistar strain *Rattus norvegicus*, three rats per group, with 300 mg/kg BW GVT-0 as preliminary dose and 2000 mg/kg BW as oral treatment dose, along with naïve GVT-0 and solvent as controls. The protocols and toxic parameters were all conducted following OECD 423. The study showed that all the treatments on both 300 and 2000 mg/kg BW of SNE GVT-0 did not compromise rats' body weight, and toxicity clinical behaviours were observed on the 2000 mg/kgBW of administration, but there is no significance observed for 300 mg/kg BW administration. Microscopic observation under haematoxylin and eosin staining confirmed the clinical findings by showing degeneration and destruction for the most of organs on the 2000 mg/kg BW of administration. The results suggest SNE GVT-0 as in category four in OECD 423 globally harmonized classification system (GHS) with estimated LD50 cut-off as 2000 mg/kg BW.
Keywords : Gamavuton-0, self nano-emulsifying system, acute toxicity.

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