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Correlation of paraquat toxicity with tissue concentrations and weight loss of the rat

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Abstract

Paraquat was administered to Sprague-Dawley and Wistar rats po and iv. Death generally occurred in 2–5 days, but some rats survived for up to 12.5 days. Loss of body weight correlated with lethality, and concentrations in lung and kidney correlated with the degree of toxic response as defined by 2 levels of weight loss and death. The lung became the organ of highest concentration of paraquat through an initial stasis phase, and paraquat was detected in the lungs of all rats that died. The initial half-life of paraquat in plasma and in the tissues was 20–30 min. The subsequent half-life of paraquat in muscle was longest, 4–5 days, and secondary half-lives in the plasma and other tissues were about 2 days. Diquat did not accumulate in lung and muscle as did paraquat, and did not produce the lung pathology. The accumulation in lung (critical organ of pathology), the relatively long secondary half-life of paraquat in the plasma and tissues, the correlation of tissue concentrations with degree of toxic response and the

findings with diquat contradict the concept of paraquat as a "hit-and-run" poison.



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