Steroidal glycoalkaloids (GAs) are toxins, produced by plants of the Solanaceae family. The potato plant (Solanum tuberosum L.) and its tubers predominantly contain the two GAs α-chaconine and α-solanine. These compounds are believed to act in synergy, and the degree of toxicity may therefore depend on their ratio in the potato. To determine the influence of α-solanine: α-chaconine ratio in potatoes on toxicity, a GM potato line (SGT 9-2) with reduced α-solanine content, and the parental control line (Desirée wild-type) having a traditional α-solanine: α-chaconine ratio were (1) studied for compositional similarity by analysing for a range of potato constituents, and (2) used in a 90-day feeding trial with the Syrian Golden hamster to study differential toxicity. The animal feeding study used diets with up to 60% freeze-dried potato powder from either line. Whilst data indicated some compositional differences between the GM line and its wildtype control these did not raise concerns related to nutritional value or safety. Results of the feeding trials showed a low number of significant differences between potato lines with different α-solanine: α-chaconine ratio but none were considered to raise safety concerns with regard to human (or animal) consumption.

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