

Targeting Talk: *Toxin Safety*

by Dr. Douglas A. Lappi

Q: Your recent issue of *Targeting Trends* stated that it was unlikely that saporin compounds or constituents would be excreted in urine or feces. However, you acknowledge that experimental data is lacking. Have there been any tests of animal urine or feces for saporin content? My animal care staff are concerned.

A: One of the reasons that no studies have been done on excretion of saporin is that there isn't much on the theoretical side to cause concern. The primary issue is that the quantity used in mice (and even rabbits) is so small that when looked at in human terms (i.e., an animal 10 to 100-times larger), the dosage becomes insignificant. The LD₅₀ for saporin in mice is 4-8 mg/kg;¹ that would translate in humans to more than you'll ever use! The immunotoxins, which contain only about 20% saporin by weight, really do not contain all that much saporin.

Looking at it another way, you need a concentration of about 100 nM to see even a vague hint of toxicity of saporin to cells. In human blood, that would correspond to 24 mg injected systemically into a person. It would be really expensive for anyone to get close to that number.

As far as urine and feces goes, the same calculations are appropriate, but there will be considerable degradation – the protein content in urine and feces is quite low and the probability is that you will be dealing with only saporin. Remember saporin is a plant protein that is related to proteins in foods that we eat (cucumbers, for example).

Reference

1. Stirpe F, Derenzini M, Barbieri L, Farabegoli F, Brown AN, Knowles PP, Thorpe PE (1987) Hepatotoxicity of immunotoxins made with saporin, a ribosome-inactivating protein from *Saponaria officinalis*. *Virchows Arch [B]* 53:259-271.

Q: Are there any studies which indicate what doses of saporin (by itself or compounded with an antibody) would be hazardous if ingested or injected (i.e. systemic dose level resulting in death or organ dysfunction).

A: When there is an antibody that does recognize a human epitope (the human p75-saporin immunotoxin that is used in rabbits, for example), at about 1 pM one sees the slightest bit of toxicity to cells. That translates, if injected by error into a human blood supply, to about 170 micrograms. That also is a gigantic dose. I am using very conservative numbers here, and the bottom line is that you cannot accidentally reach such dangerous levels under normal handling situations.

Having said all this, we still recommend that our customers take excellent care of themselves and we state clearly that precautions should be taken by people handling these materials, just as they should use precautions with all laboratory chemicals. Please refer to the data sheets provided with our products for safety instructions.



Saporin (Cat. # PR-01)

a ribosome-inactivating protein
from seeds of the plant
Saponaria officinalis

Saporin is effective as a control
in experiments with targeted
saporin immunotoxins or
ligand toxins.

Also available:

Anti-Saporin (Goat) AB-15
Anti-Saporin (Chicken,
affinity purified) AB-17AP

