

Letters to the Editor

Interconversion between local lymph node assay EC3 units

doi:10.1111/j.1600-0536.2011.01913.x

Dear Sir,

Skin sensitization potency in the murine local lymph node assay (LLNA) is most often expressed as EC3, the weight percentage of test chemical, in the vehicle, giving a three-fold stimulation index (SI) (1). For comparison with other data, for example human repeat insult patch test data, it is desirable to express EC3 in units of micrograms per square centimetre, $\mu\text{g}/\text{cm}^2$. The conversion is as follows.

For an EC3 of 1%, the SI value of 3 is obtained with a concentration of 1 g of test compound in 100 cm^3 of vehicle, that is, 10 g/l, or 10 $\mu\text{g}/\mu\text{l}$. In the LLNA, 25 μl are applied to 1 cm^2 . Thus an SI value of 1% corresponds to $10 \times 25 = 250 \mu\text{g}/\text{cm}^2$. An SI value of $x\%$ corresponds to $250x \mu\text{g}/\text{cm}^2$. So the rule is: to convert EC3 in percentage units to $\mu\text{g}/\text{cm}^2$ units, multiply by 250. Conversely, to convert EC3 in $\mu\text{g}/\text{cm}^2$ to percentage units, divide by 250.

If an LLNA EC3 value (in %) has been obtained with a volume (test material + vehicle) different from 25 μl and/or with an area of application different from 1 cm^2 , the conversion factor of 250 needs to be corrected accordingly. If the volume is $V \mu\text{l}$ and the area is $A \text{ cm}^2$, the factor is $10V/A$.

For scientific purposes, it is more useful to express the EC3 in molar units. If EC3 (wt%) is divided by the

Table 1. LLNA potency values in various units

Compound	Molecular weight	EC3 (%)	EC3 ($\mu\text{g}/\text{cm}^2$)	pEC3
3,4-Dinitrochlorobenzene	202.5	0.04	10	3.7
Isoeugenol	164	1.5	375	2.0
Cinnamal	132	2.3	575	1.8
1-Bromopentadecane	292	5.1	1275	1.8
Eugenol	164	10.1	2525	1.2

molecular weight MW, this gives the EC3 in 'mole per cent', that is, number of moles per 100 cm^3 . In these units, the EC3 values are almost always decimal fractions. It is often convenient to convert them to pEC3 values, defined as $\log(\text{MW}/\text{wt}\%\text{EC3})$. pEC3 values are usually numbers between 0 and 10 – the larger the number, the greater the potency.

For illustration, Table 1 lists EC3 values in percentage units and in $\mu\text{g}/\text{cm}^2$, together with the corresponding pEC3 values, for a selection of organic compounds tested in the LLNA (1).

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Conflicts of interest: The author has declared no conflicts.

Reference

- 1 Basketter D A, Gerberick F, Kimber I. The local lymph node assay and the assessment of relative potency: status of validation. *Contact Dermatitis* 2007; **57**: 70–75.