Table 5.1.3.-2. - *Topical preparations*

		Log reduction			
		2 d	7 d	14 d	28 d
Bacteria	A	2	3	-	NI
	B	-	-	3	NI
Fungi	A	-	-	2	NI
	B	-	-	1	NI

The A criteria express the recommended efficacy to be achieved. In justified cases where the A criteria cannot be attained, for example for reasons of an increased risk of adverse reactions, the B criteria must be satisfied.

Table 5.1.3.-3. - *Oral preparations*

	Log reduction	
	14 d	28 d
Bacteria	3	NI
Fungi	1	NI

The above criteria express the recommended efficacy to be achieved.

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5.1.4. MICROBIOLOGICAL QUALITY OF PHARMACEUTICAL PREPARATIONS

The following chapter is published for information.

In the manufacture, packaging, storage and distribution of pharmaceutical preparations, suitable means must be taken to ensure their microbiological quality. The pharmaceutical preparations should comply with the criteria given below.

Category 1

Preparations required to be sterile by the relevant monograph on the dosage form and other preparations labelled sterile.

– Test for sterility (*2.6.1*).

Category 2

Preparations for topical use and for use in the respiratory tract except where required to be sterile and transdermal patches.

– Total viable aerobic count (*2.6.12*). Not more than 10^2 micro-organisms (aerobic bacteria plus fungi) per gram, per millilitre or per patch (including the adhesive and backing layer).
– Transdermal patches: absence of enterobacteria and certain other gram-negative bacteria, determined on 1 patch (including the adhesive and backing layer). Other preparations: not more than 10^1 enterobacteria and certain other gram-negative bacteria per gram or per millilitre (*2.6.13*).
– Absence of *Pseudomonas aeruginosa*, determined on 1 g, 1 ml or one patch (including the adhesive and backing layer) (*2.6.13*).
– Absence of *Staphylococcus aureus*, determined on 1 g, 1 ml or one patch (including the adhesive and backing layer) (*2.6.13*).

Category 3

A. *Preparations for oral and rectal administration.*
– Total viable aerobic count (*2.6.12*). Not more than 10^3 bacteria and not more than 10^2 fungi per gram or per millilitre.
– Absence of *Escherichia coli* (1 g or 1 ml) (*2.6.13*).

B. *Preparations for oral administration containing raw materials of natural (animal, vegetable or mineral) origin for which antimicrobial pretreatment is not feasible and for which the competent authority accepts microbial contamination of the raw material exceeding 10^3 viable micro-organisms per gram or per millilitre. Herbal medicinal products described in category 4 are excluded.*
– Total viable aerobic count (*2.6.12*). Not more than 10^4 bacteria and not more than 10^2 fungi per gram or per millilitre.
– Not more than 10^2 enterobacteria and certain other gram-negative bacteria per gram or per millilitre (*2.6.13*).
– Absence of *Salmonella* (10 g or 10 ml) (*2.6.13*).
– Absence of *Escherichia coli* (1 g or 1 ml) (*2.6.13*).
– Absence of *Staphylococcus aureus* (1 g or 1 ml) (*2.6.13*).

Category 4

Herbal medicinal products consisting solely of one or more herbal drugs (whole, reduced or powdered).

A. *Herbal medicinal products to which boiling water is added before use.*
– Total viable aerobic count (*2.6.12*). Not more than 10^7 bacteria and not more than 10^5 fungi per gram or per millilitre.
– Not more than 10^2 *Escherichia coli* per gram or per millilitre (*2.6.13*, using suitable dilutions).

B. *Herbal medicinal products to which boiling water is not added before use.*
– Total viable aerobic count (*2.6.12*). Not more than 10^5 bacteria and not more than 10^4 fungi per gram or per millilitre.
– Not more than 10^3 enterobacteria and certain other gram-negative bacteria per gram or per millilitre (*2.6.13*).
– Absence of *Escherichia coli* (1 g or 1 ml) (*2.6.13*).
– Absence of *Salmonella* (10 g or 10 ml) (*2.6.13*).

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5.1.5. APPLICATION OF THE F_0 CONCEPT TO STEAM STERILISATION OF AQUEOUS PREPARATIONS

The following chapter is published for information.

The F_0 value of a saturated steam sterilisation process is the lethality expressed in terms of the equivalent time in minutes at a temperature of 121 °C delivered by the process to the product in its final container with reference to micro-organisms possessing a *Z*-value of 10.

The total F_0 of a process takes account of the heating up and cooling down phases of the cycle and can be calculated by integration of lethal rates with respect to time at discrete temperature intervals.

When a steam sterilisation cycle is chosen on the basis of the F_0 concept, great care must be taken to ensure that an adequate assurance of sterility is consistently