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Leukeran

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Leukerman

Generic Name:
Chlorambucil

Trade Name:
Leukaran

Classification:
Antineoplastic, alkylating agent

Uses:
Chlorambucil is used alone or with other antineoplastics to treat chronic lymphocytic leukemia, malignant lymphomas, Hodgkin’s disease, giant follicular lymphoma, and cancers of the ovaries, breast, and testes.

Unlabeled Uses:
Unlabeled uses include treatment of nonneoplastic conditions such as vasculitis complicating rheumatoid arthritis, autoimmune hemolytic anemias associated with cold agglutinins, lupus glomerulonephritis, idiopathic nephrotic syndrome, polyarteritis nodosa, and macrophagocytosis.

Chemical Names:
Chlorambucil. 4-[bis(2-chloroethyl)amino]benzenesbutanoic acid; 4-[bis(2-chloroethyl)amino]phenyl]butyric acid; N,N-di-2-chloroethyl-p-aminophenylbutyric acid.

Chemical Formula:
C_{14}H_{19}Cl_{2}NO_{2}

The Body’s Processing of Chlorambucil:
Chlorambucil is taken orally in pill form. It is taken before or after meals or at bedtime.

Absorption of chlorambucil by the body:
It is quickly absorbed usually within an hour in the upper gastrointestinal tract. Once the medicine is absorbed into the bloodstream, it attacks the cancerous cells and other cells around it and kills them.

Body’s breakdown of chlorambucil:
After the body uses the medicine, it travels to the liver where it is broken down and prepared for elimination. More than half of the chlorambucil is eliminated through the urine after it is metabolized in the liver.

Available Dosage:
2 mg tablets

Dose to Molecules

\[
\frac{0.004 \text{ g Leukaran}}{304.21 \text{ g/mol Leukaran}} \times \frac{1 \text{ mol Leukaran}}{6.02 \times 10^{23} \text{ molecules of Leukaran}} = 7.92 \times 10^{16} \text{ molecules of Leukaran}
\]

Dose to Tablets

\[
\frac{4 \text{ mg dose}}{1 \text{ dose}} \times \frac{1 \text{ tablet}}{2 \text{ mg}} = 2 \text{ tablets}
\]

Molar mass of chlorambucil:
14 mol of C × (12.0 g/mol C) = 168.0 g
19 mol of H × (1.0 g/mol H) = 19.0 g
2 mol of Cl × (35.5 g/mol Cl) = 71.0 g
1 mol of N × (14.0 g/mol N) = 14.0 g
2 mol of O × (16.0 g/mol O) = 32.0 g
168.0 g + 19.0 g + 71.0 g + 14.0 g + 32.0 g = 304.0 g

Literature value for molar mass:
304.21 g/mol