Analysis of Pymaceuticals Data:

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Tables 1 & 2.

Looking at Tables 1 & 2.

1. The Capomulin, Ramicane, and Propriva treated mice had the lowest mean and median Tumor Volumes.
2. The Capomulin and Ramicane groups also had the two lowest SEM values. The lower SEM values in these two groups is only partially explained by the larger number of observations in the data set in these two groups (230 and 228 respectively) as seen in the subsequent bar graphs.
3. Part of the explanation of the lower SEM values for these two groups is in the tighter grouping of the Tumor Volume observations as indicated by the lower Variance of these two groups.

Box plots.

1. Box Plots of the Final Tumor Volume numbers for the Capomulin, Ramicane, and Infubinol treated mice show a marked visual difference between the Capomulin and Ramicane groups relative to the Infubinol and Ceftamin groups, demonstrating lower medians and tighter grouping of the Final Tumor Volumes for the Capomulin and Ramicane groups.

Extra Analyses.

1. I added the data for the Placebo group to the Final Tumor Volume data.
2. The standard practice in comparing clinical efficacy of various treatment groups is to compare them to a Placebo group which does not receive any medication but is otherwise treated exactly the same. Please see the revised Box Plots.
3. The Box Plot for the Placebo group looks much like the plots for the Infubinol and Ceftamin groups in terms of median, first and third quartile values, and upper and lower boundaries for outliers.

T-tests.

1. The Propriva group was then added to the Final Tumor Volume data for the purpose of conducting T-tests as it had the third lowest average Tumor Volume in Tables 1 & 2.
2. The Capomulin, Ramicane, and Propriva groups produced statistically significant lower Final Tumor Volumes when compared to the Placebo group.
3. The Capomulin and Ramicane groups produced statistically significant lower Final Tumor Volumes when compared to the Propriva, Infubinol, and Ceftamin groups.
4. The Capomulin and Ramicane Final Tumor Volumes were not significantly different from each other.
5. Propriva, Infubinol, and Ceftamin Final Tumor Volumes were not significantly different from each other (p>.05).
6. Infubinol and Ceftamin Final Tumor Volumes were not significantly different from those of the Placebo group.

Plain English description of results.

The Capomulin and Ramicane treatment in this project showed comparable and significant benefit in treating SCC of the skin. Propriva treatment showed a slight benefit. None of the other medications demonstrated any impact on the course of this disease in mice.

BTW – This is totally fictitious data. SCC of the skin in humans is treated with excision, cryo-surgery, or 5-flurouricil. Even though SCC of the skin is described in dogs and cats, it is also treated with excision. I was unable to find any information on drugs with any of these names. 😊