```
## Loading required package: carData
```

```
## Registered S3 methods overwritten by 'ggplot2':
##   method         from
##   [.quosures     rlang
##   c.quosures     rlang
##   print.quosures rlang
```

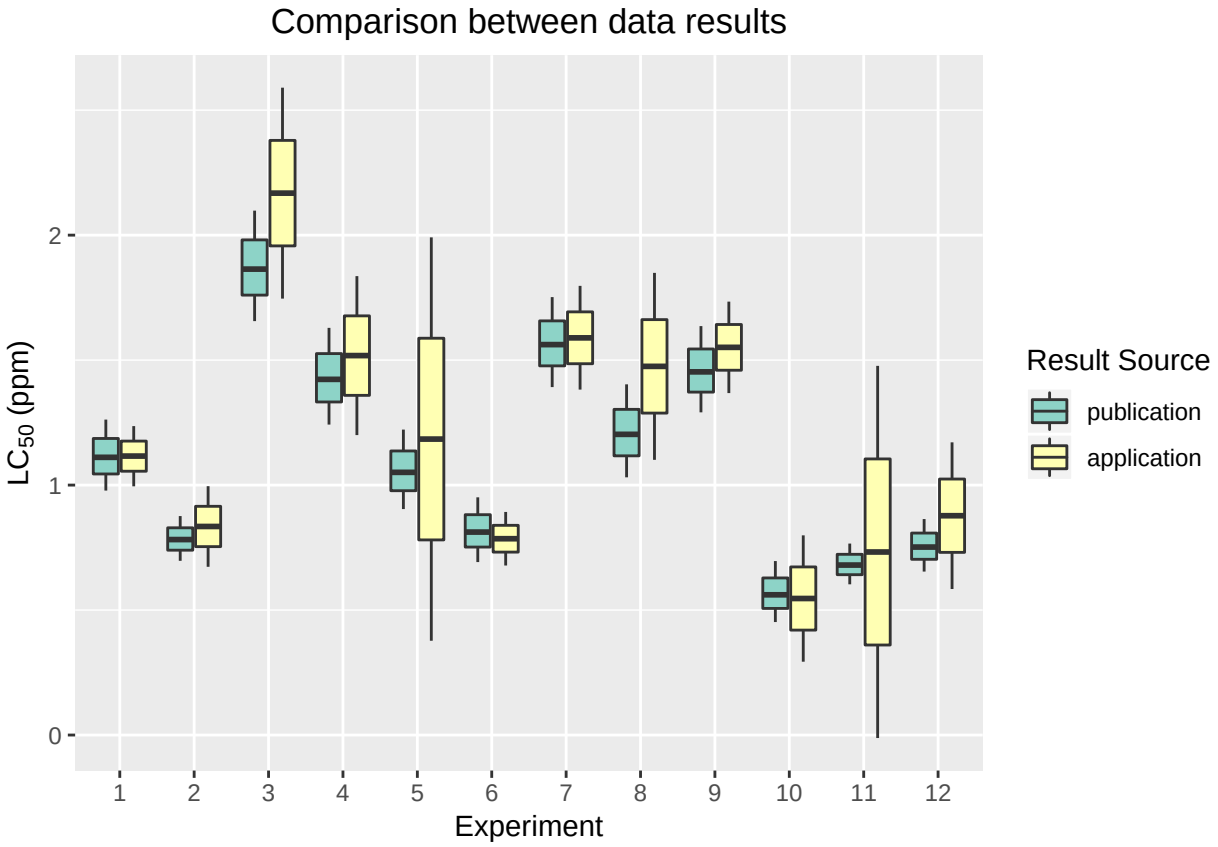
```
##
##  Shapiro-Wilk normality test
##
## data:  dati.1$ab[location == "publication"]
## W = 0.94878, p-value = 0.6192
```

```
##
##  Shapiro-Wilk normality test
##
## data:  dati.1$ab[location == "application"]
## W = 0.94026, p-value = 0.5014
```

```
## Levene's Test for Homogeneity of Variance (center = mean)
##       Df F value Pr(>F)
## group  1   0.326 0.5738
##       22
```

```
##             Df Sum Sq Mean Sq F value Pr(>F)
## location     1  0.053 0.05252   0.271  0.608
## Residuals   22  4.262 0.19375
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = results.lm)
##
## $location
##                                 diff        lwr       upr     p adj
## publication-application -0.09355833 -0.4662285 0.2791118 0.6078163
```



Effects of exposure to high concentrations of waterborne Tl on K and Tl concentrations in Chironomus riparius larvae

Belowitz, R., Leonard, E. M., & O'Donnell, M. J. (2014). Effects of exposure to high concentrations of waterborne Tl on K and Tl concentrations in Chironomus riparius larvae. Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology, 166, 59-64.

This example compares the published data from the cited article to results of this web application using the same raw data.

The Shapiro test using the data from the publication:

```
##
##  Shapiro-Wilk normality test
##
## data:  dati.1$ab[location == "publication"]
## W = 0.94878, p-value = 0.6192
```

The result of the Shapiro test with p values greater than 0.05 assume the both sets of data come from normal distribution.

The Levene test results:

The Levene's test result of a p-value greater than 0.05 indicates that the variances for both sets of data are not different.

The ANOVA analysis:

The ANOVA analysis shows that both data sets have statiscally equal means.

The Tukey HSD analysis:

The Tukey HSD analysis indicates that no significant differences exist between the means of the publication results and the web application results.