

DISTRIBUTIONS OF STATISTICS FROM THE NON-CENTRAL DUNNETT TEST

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- **ABSTRACT:** *The Dunnett test is used to compare all the treatments with a control, considering random and independent samples, derived from normal distribution variables. The limitation to the use of this test is the difficulty in obtaining the probabilities of multivariate t distribution and the statistical quantiles values, because the test can be applied in balanced and unbalanced, unilateral or bilateral situations, with infinite correlation possibilities between the comparisons. This paper presents a demonstration to non-central multivariate t distribution related with statistics by Dunnett test, considering a vector of non-centrality δ . Initially, the distribution of the maximum and the maximum module of non-central normal multivariate is presented. From these distributions comes to non-central multivariate t distribution. The function of the distribution of the maximum non-central multivariate t and the maximum module non-central multivariate t with $\delta = \mu$ non-centrality parameter is used in unilateral and bilateral Dunnett's test, respectively, when the degrees of freedom are finite. When the degrees of freedom tend to infinity, the distribution functions fall in the maximum of non-central multivariate normal distribution and in the maximum module of non-central multivariate normal.*
- **KEYWORDS:** *Multiple comparisons with a control; distribution t non-central multivariate; software R.*

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