



## Polynomial curves of cardiac dysfunction in rats with aortic stenosis

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With regard to the experimental research in cardiology, cardiac remodeling has been studied in rats with supravulvular aortic stenosis (AS), having as one of the fundamental interests the search for biometric templates in order to predict functional parameters regarding sequential increasing levels of calcium administered to animals. The most common methodology that has been used is to apply multivariate tests of comparisons of mean responses of the levels considered, involving all possible contrasts between different levels of concentration. In the present study, which is ongoing, the main propose is to build polynomial models that represent the average profile of responses of animals receiving increasing calcium doses concentrations. For this purpose, the technique developed by Potthoff and Roy (1964) will be considered to adjustment of polynomials, which estimates the parameters of biometric template considering the full structure of variability of the data, presented by the variances and covariances. For the development and application of the methodology, animals data involved in real research prepared by the Research Group in Experimental Cardiology, Faculty of Medicine of Botucatu (FMB) - São Paulo State University (UNESP), located in Botucatu will be used. All male Wistar rats were submitted to previous surgery for supravulvular AS induction according to the method developed by the laboratory and, six weeks after the surgical procedure, divided into two groups : one treated with normolipidic diet and the other hyperlipidic, both saturated. After 12 weeks, all animals were submitted to the longitudinal process of increasing calcium doses. Next, functional mechanical parameters are analyzed from the curves obtained during an isometric contraction, for example, developed tension (DT), resting tension (RT), maximum rate of rise of voltage developed (+dT/dt) and top speed of decrease in developed tension (-dT/dt). Thus, the main objective will be to establish the answer curves for the parameters described above so that one can compare the functional curves of answers as the different diets administered. It is concluded that this methodology is of high relevance to animal testing area because it uses more consistent statistical procedures for understanding the biological reality and hence solidifies interdisciplinarity between the respective areas of study.

**Keywords:** multivariate analysis; polynomial models; experimental research; aortic stenosis.