106523

TERAPÊUTICA E ASPECTOS CLÍNICOS: GRAVIDEZ, DM NO JOVEM, FARMACOECONOMIA, NOVAS TECNOLOGIAS

LIPID-LOWERING POTENTIAL OF *MORINDA CITRIFOLIA* IN AN EXPERIMENTAL MODEL OF DIABETES

José Bégue Moreira de Carvalho[1], Glauce Socorro de Barros Viana[2], Thyciara Fontenele Marques[3], Neusa Moreira de Carvalho[1], David Alex Magalhães Barreira[1], Saulo Wanderley Filho[1], Miguel Águila Toledo[1]

[1] Centro Universitário de Patos (Unifip). [2] Universidade Federal do Ceará. [3] Faculdade de Medicina Estácio de Juazeiro do Norte

Introduction: Metabolic syndrome has increased rapidly in parallel with sedentary lifestyles, leading to high healthcare costs. There are many studies in search for potentially anti-dyslipidemic natural products with low risk of side effects. **Objectives:** To evaluate the effects of the hydroalcoholic extract of *M. citrifolia* fruits on triglyceride levels in diabetic rats. **Methods:** A solution of Alloxan (40 mg/kg, IV) was administered to male Wistar rats (250 g) and, after 48 h, they were submitted to blood collection to measure blood glucose and triglycerides (mg/dL). Only those with blood glucose levels above 250 mg/dL were submitted to the study. The animals were administered daily 100 and 500 mg/kg of Noni extract (N100 and N500) and 120 mg/kg of metformin + 100 mg/kg of Noni extract (M120 + N100) by mouth for 1 month. After this period, the animals were subjected to a new blood collection to measure the glucose and triglycerides. Untreated diabetic controls (DC) received saline solution for the same period. For statistical analysis, ANOVA and Newmam-Keuls (post hoc test) were used for multiple comparisons. Whenever necessary, Student's "t" test was used to compare the average before and after the treatment. Differences were considered significant when $p < 0.05$. **Results:** The N500 group reduced triglyceride levels by 56.8% compared to levels before treatment (N500: n = 9, before: 498.6 ± 86.0; post-treatment: 215.1 ± 58, 35), while in groups N100, M120 + N100 and DC there was no statistical difference in triglyceride levels (N100: n = 7, before: 462.8 ± 78.05; post-treatment: 288.9 ± 73.87, M120 + N100: n = 6, before: 341.6 ± 86.24; post-treatment: 320.5 ± 110.5 and DC: n = 7, before: 260.9 ± 66.5; post-treatment: 199.6 ± 38.34) with a reduction of 37%, 6.1% and 23.4% respectively. **Conclusions:** The repeated administration of the hydroalcoholic extract of *Morinda citrifolia* fruits in diabetic rats promoted a significant reduction in triglycerides at the dose of 500 mg/kg after one month, a result not observed at the dose of 100 mg/kg or when associated with metformin (120 mg/kg). The results obtained indicate that the lipid-lowering response of Noni is proportional to the dose used and that studies with progressively higher doses are necessary. **Keywords:** *Morinda citrifolia*; metabolic syndrome; experimental model.

106292

COMPLICAÇÕES CRÔNICAS E AGUDAS: NEFROPATIA, NEUROPATIA, RETINOPATIA, HIPOGLICEMIA, DISLIPIDEMIA, PÉ DIABÉTICO

MACHINE LEARNING ALGORITHMS TO PREDICT IN-HOSPITAL MORTALITY IN PATIENTS WITH DIABETIC FOOT ULCERATION

Ligia de Loiola Cisneros[1], Héber Hwang Arcolezi[2], Selene Cerna[2], Jessica Lohane Brandão[1], Guilherme de Castro Santos[1], Tulio Pinho Navarro[1], Aparecido Augusto de Carvalho[3]

[1] Federal University of Minas Gerais. [2] Université Bourgogne Franche-Comté. [3] São Paulo State University

Introduction: Up to 34% of people with diabetes will develop foot ulceration in their lifetime. A non-healing ulcer can lead to lower limb amputation with permanent disabilities and is frequently associated with mortality in hospitalized patients. By applying artificial intelligence, more precisely Machine Learning (ML) models, it would be possible to identify the risk of mortality in patients with diabetic foot ulceration (DFU). In this way, a continuously trained intelligent model with patient data would work as a triage tool and as an adjunct to a clinical decision for healthcare professionals. **Objective:** We investigated the accuracy of 5 ML models for a fully automated prediction of in-hospital mortality of DFU patients and the feature importance of variables as predictors. **Methods:** Retrospective electronic medical data of adults with DFU admitted to the Hospital Risoleta Tolentino Neves at Minas Gerais/Brazil, from 2015 to 2017, were used and analyzed. Our data set contains 20 variables of 326 patients such as demographic data, Wound, Ischemia and Foot Infection (WIfI) scores, clinical and physical examination findings and laboratory data, overtime of the hospital admission. The target "mortality" is a binary feature (0 – survived and 1 – died). The ML models compared were: Logistic Regression (LR), Support Vector Machine (SVM), Light Gradient Boosting Machine (LGBM) and two deep learning models, namely, Convolutional Neural Network (CNN) and Attentive Interpretable Tabular Learning (TabNet). Models were trained using a 5-fold cross-validation methodology, an oversampling technique to tackle the imbalance class problem named "Adaptive synthetic sampling approach for imbalanced learning" on each training set, and Bayesian Optimization for hyperparameters' tuning. **Results:** Table 1 shows the results of the 5 techniques tested, where SVM presented the best predictive ability by reaching a true positive rate (sensitivity) of 94.44% and an area under the receiver-operating-characteristic curve (AUC) of 83.17%, including the WIfI classification scores as predictors. In addition, we identified 5 variables with the most impact: bed-bound condition, age, hemoglobin, creatinine and WIfI amputation risk. **Conclusions:** Results demonstrated that predicting the mortality of DFU patients with good accuracy is possible and feasible for practical purposes. **Keywords:** Diabetic foot; hospital mortality; machine learning.