



RESEARCH ARTICLE

EVALUATION OF ANTI-DIABETIC POTENTIAL OF THE *SYZYGium CUMINII* (LINN) SKEELS BY REVERSE PHARMACOLOGICAL APPROACHES

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Oral administration of 50 and 100 mg/kg of the aqueous and methanol extracts of roots, leaves, seeds and barks of *Syzygium cuminii* in alloxan monohydrate (150 mg/kg *i.p.*) induced diabetic male Sprague Dawley (SD) rats, for 21 days resulted in a statistically significant (P variation 0.05 to 0.001) reduction in blood glucose level and biochemical parameters in dose dependent manner. They also prevented decrease in body weight. Oral administration of 100 and 200 mg/kg aqueous extract of leaves (AL) in the oral glucose tolerance test on streptozotocin (STZ 75 mg/kg *i.p.*) induced diabetes, in experimental diabetes induced by alloxan (150 mg/kg *i.p.*) and streptozotocin (70 mg/kg *i.p.*) resulted in a significant (P < 0.001) hypoglycemic activity. The safety profiles of extracts confirmed by acute toxicity study on mice and sub-chronic toxicity of AL extract on male rats. On the basis of these investigations, we may partially conclude that the *S. cuminii* leaves could be a potent antidiabetic agent.

Key words: *Syzygium cuminii*, Streptozotocin, Sub-chronic toxicity, Antidiabetic, Alloxan.

INTRODUCTION

Since decades, plants are well known to produce metabolites with diverse bioactivities (Jain *et al* 2011; Jenny *et al* 2012; Jain and Argal, 2013). Diabetes has emerged as a major healthcare problem in India. According to Diabetes Atlas published by the International Diabetes Federation (IDF), there were an estimated 40 million persons with diabetes in India in 2007 and this number is predicted to rise to almost 70 million people by 2025. The countries with the largest number of diabetic people will be India, China and USA by 2030. It is estimated that every fifth person with diabetes will be an Indian. Due to this, economic burden due to

diabetes in India is amongst the highest in the world. The real burden is however due to its associated complications which lead to increased morbidity and mortality (Gupta, 2008). A wide array of plants and active principles representing numerous chemical compounds like alkaloids, glycosides, galactomannan gum, polysaccharides, peptide glycans, hypoglycans, guanidine, steroids, carbohydrates, glycopeptides, terpenoids, amino acids etc. have demonstrated activity consistent with their possible use in the treatment of Non Insulin Dependent Diabetes Mellitus (Grover *et al* 2002). With the advent of the western culture and the concurrent modern or allopathic