

11<sup>th</sup> International Conference on  
**NURSING AND IMMUNOPHARMACOLOGY**  
November 20-21, 2017 Melbourne, Australia

### Development and evaluation of poly-herbal formulation for the treatment of obesity

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The objective of present study was studying anti-obesity effect of polyherbal formulation comprising fruits of *Embelia ribes* Burm., *Embllica officinalis* Geartn., *Terminalia chebula* Retzr., *Terminalia belerica* Roxb., *Piper nigrum* Linn. and *Piper longum* Linn., rhizomes of *Zingiber officinalis* Roscoe. and cow urine distillate. Selected plant parts as mentioned above were collected, powdered and extracted with distilled water or methanol separately. Four different formulations were prepared (SJTOb-1 to SJTOb-4) and evaluated for its effect on reduction in cholesterol level using triton induce hyperlipidemia model. SJTOb-1 (200 mg/kg, p.o.) which has shown optimal effect was further evaluated for its effect on lipid profile using triton and atherogenic diet induce hyperlipidemia model using Atorvastatin (1 mg/kg, p.o.) as reference standard drug. Additionally, the SJTOb-1 was investigated for its mechanism of action by estimating HMG Co-A reductase activity, fecal cholesterol excretion, brain serotonin level and anorectic activity. Further, SJTOb-1 at 200 mg/kg was tested for toxic effect and was standardized by estimating phytoconstituent. At dose 200 mg/kg, the SJTOb-1 significantly decreased ( $p < 0.001$ ) the total cholesterol, triglyceride, LDL and VLDL while it significantly increased ( $p < 0.001$ ) the level of HDL. The SJTOb-1 also significantly inhibit ( $p < 0.001$ ) the HMG Co-A reductase activity. Fecal cholesterol excretion and brain serotonin level was significantly increased ( $p < 0.05$ ) by SJTOb-1. In anorectic activity, SJTOb-1 significantly delayed gastric emptying ( $p < 0.001$ ) while food intake was decreased ( $p < 0.05$ ). Toxicity study indicated that the SJTOb-1 at therapeutic dose is safe. Phytochemical estimation showed that SJTOb-1 was rich in flavanoid, phenolics and alkaloids. In conclusion, the present study revealed that the SJTOb-1 demonstrated its cholesterol reducing effect by increasing fecal cholesterol excretion and decreasing cholesterol biosynthesis. Additionally the effect on brain serotonin level, gastric emptying time and food intake indicate that the SJTOb-1 could have potentially beneficial effect in obesity and related complications like hyperlipidemia, diabetes and hypertension.

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