Research Article

In-vitro Evaluation of the Carminative Potential of *Naakupoochi Kudineer Chooranam*: A Traditional Siddha Formulation

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ABSTRACT

To evaluate the carminative activity of *Naakupoochi kudineer chooram* Carminative agents play a crucial role in alleviating gastrointestinal discomfort caused by gas accumulation. Traditional Siddha formulations have long been used for their therapeutic benefits, including carminative activity. This study investigates the in-vitro carminative potential of *Naaku poochi Kudineer Chooranam* (NPKC), a classical polyherbal Siddha preparation. Employing a modified acid-base titration method, the quantity of carbon dioxide evolved was measured as an indicator of carminative activity. The results demonstrated a dose-dependent increase in CO_2 evolution, confirming the carminative efficacy of NPKC.

Keywords: Siddha medicine, carminative activity, *Naakupoochi Kudineer Chooranam*, *in-vitro* assay, acid-base titration, carbon dioxide evolution.

INTRODUCTION

Flatulence and bloating are common gastrointestinal complaints resulting from excessive gas accumulation. Carminatives are agents that either reduce gas formation or promote its expulsion. Siddha medicine, a traditional Indian system of healing, offers numerous formulations aimed at managing gastrointestinal ailments. *Naakupoochi Kudineer Chooranam* (NPKC) is a classical formulation indicated for pediatric worm infestations and digestive disturbances[1-3].

Despite its traditional usage, scientific validation of its pharmacological activities, including carminative potential, is limited. This study aimed to assess the *in-vitro* carminative activity of NPKC by quantifying CO_2 release using a standardized acid-base titration method.

MATERIALS AND METHODS

Sample Preparation

NPKC samples weighing 0.5 g, 1 g, and 2 g were each dispersed in distilled water in individual conical flasks with air-tight nozzles.

Experimental Procedure

The assay followed a modified version of the protocol by Swapnil Sharma et al. Each test flask was connected to a NaOH (1 M) solution in a closed plastic container equipped with an aeration system. The flask was manually agitated for 45 minutes and then vigorously shaken for another 30 minutes before being left to stand overnight.

The carbon dioxide evolved from the reaction was absorbed into the NaOH solution, converting it into sodium carbonate. The mixture was subsequently titrated with standard hydrochloric acid using phenolphthalein (first endpoint) and methyl orange (second endpoint) as indicators.

The mass of CO_2 evolved was calculated using the formula: Mass of CO_2 (g) = Volume of HCl (mL) × Molarity × 44.01 (g/mol)

Where molarity = 0.09184 M and 44.01 is the molar weight of CO_2.

RESULTS

The mass of CO_2 evolved from each test concentration is presented in the table below (mean ± SD, n=3):

Test Sample (g)	CO_2 Released (g)
0.5	9.16 ± 0.83
1.0	12.80 ± 0.46
2.0	18.19 ± 1.21

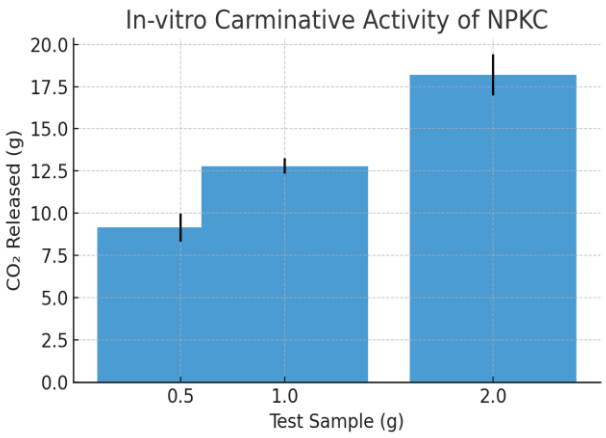

Figure 1: *In-vitro* Carminative Activity of NPKC

DISCUSSION

The ability of a compound to release carbon dioxide in simulated digestive conditions reflects its gas-relieving or carminative action. In this study, NPKC demonstrated a notable increase in CO_2 release with increasing sample concentration, thereby indicating its capacity to disintegrate entrapped gas and potentially ease gastrointestinal discomfort[3].

Such traditional formulations, when validated scientifically, can offer safer and more accessible alternatives to synthetic carminatives, especially for pediatric use, for which NPKC is traditionally prescribed.

CONCLUSION

The Siddha formulation *Naakupoochi Kudineer Chooranam* exhibits promising *in-vitro* carminative activity, as evidenced by the measurable CO_2 evolution. These findings support its traditional use in relieving gaseous distension and suggest further *in-vivo* studies and clinical trials for comprehensive validation.

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