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Antifertility Compound from the Seeds of *Carica papaya*

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Abstract

The antifertility effects of the isolated compound from the seeds of *Carica papaya* were investigated. The aim of this research is to obtain the chemical structure of antifertility compound againts spermatozoa of the white rat (*Rattus novergicus*) from the seeds of *C. papaya*. The ethyl acetate extract (7 g) was separated by solvent partition and a combination of column chromatography to yield a colorless solid isolated (26.1 mg). The chemical stucture of isolated compound was elucidated on the basis of spectroscopic evidences and identified as a 1,2,3,4-tetrahydropyridin-3-yl-octanoate. The isolated compound showed the significant difference of activity of compound compared with the control and decreased motility and viability and increased abnormality of the spermatozoa with 32%, 18% and 294%, respectively.

Keywords: antifertility, *Carica papaya*, *Rattus norvegicus*, 1,2,3,4-tetrahydropyridin-3-yl-octanoate

1. Introduction

The fractions of methanol extract from the root of *C. papaya* was reported to have a significant reduction in spermatozoa count of rat, and also there was an increase in the percentage of sperm cells[1]. The contraceptive efficacy and reversibility of the chloroform extract of the seeds of *C. papaya* were investigated in adult male rabbits. The effect of *C. papaya* seeds on sperm parameters and spermatogenesis are an FSH-deprivation effect[2]. The crude extract of bark of *C. papaya* (5-10 mL/kg, p.o for 4 weeks) on the seminiferous tubules of rats showed a complete loss of fertility attributing to decline in sperm motility and alteration in their morphology. The bark showed the safe and could serve as an effective male contraceptive in animal[3]. Lohiya et al. (1999)[2] concluded that the methanol extract of *C. papaya* seeds were safe to use as antifertility male rat[4] and the isolated compound from the seeds of *C. papaya* were equally effective in terms of contraceptive efficacy, reversible, and without adverse side effects[4]. The chloroform extract of seeds of *C. papaya*, at a dose of 50,100 or 150 mg/kg, was orally administered to dogs exerting a significant contraceptive effect by reducing sperm motility and concentration[5]. The research revealed that *C. papaya* seeds as antifertility was potential in reducing quality of spermatozoa. However, the chemical structure of the active compound was not yet reported. As an effort to search for a new antifertility compounds from Indonesia plants, in this paper, we reported isolation and structural elucidation of the antifertility compound from the seed of *C. papaya*.

2. Material and methods

2.1 General experimental procedure

The IR spectra was obtained on FTIR Shimadzu. NMR spectra was recorded with a JEOL ECA 500 MHz spectrometer using TMS as an internal standard. Vacuum liquid chromatography was carried out using silica gel G60 and column liquid chromatography using Merck silica gel (70-230 mesh) and ODS (Fuji Sylisia), and TLC analysis was done on precoated silica gel GF_{254} and ODS RP-18 F_{254} 0.25 mm. The analysis of spermatozoa was determined using hemasitometer improved Neubauer and microscope.

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