

PROVISION OF ARAK BALI REDUCES SPERMATOZOA QUALITY OF WHITE RATS (*Rattus norvegicus*)

Ni Wayan Sukma Antari, Alfiah Hayati, Dwi Winarni

Department of Biology, Faculty of Science and Technology, Universitas Airlangga

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh pemberian arak bali terhadap kualitas spermatozoa meliputi morfologi, motilitas, viabilitas, integritas membran spermatozoa tikus (*Rattus norvegicus*). Penelitian dilakukan dalam 2 tahap yaitu: tahap I penyebaran kuisioner yang dilakukan di 5 kabupaten di Bali untuk mengetahui jenis dan frekuensi konsumsi arak bali dan tahap II dilakukan pemberian perlakuan arak bali pada hewan coba. Penelitian ini menggunakan 24 ekor tikus (170-200 gram), dibagi menjadi 4 kelompok yaitu: satu control dan tiga perlakuan (diberi arak bali yang mengandung 40% alkohol sebanyak 0,1 dan 0,5 mL serta alkohol sintesis sebanyak 0,1 mL, selama 45 hari. Hasil penelitian menunjukkan bahwa dari lima kabupaten di Bali, sebagian besar masyarakatnya mengkonsumsi arak bali komersial dan sebagian besar frekuensi konsumsinya satu minggu lebih dari satu botol (350 mL). Pemberian arak bali pada hewan coba, menurunkan kualitas (morfologi, motilitas, viabilitas, integritas membran), semakin besar volume yang diberikan semakin menurun kualitas spermatozoanya. (FMI 2016;52:235-240)

Kata kunci: arak bali, kualitas spermatozoa (morfologi, motilitas, viabilitas, integritas membran), tikus (*Rattus norvegicus*)

ABSTRACT

This study aimed to determine the effect of arak bali on the quality of spermatozoa include morphology, motility, viability, membrane integrity of spermatozoa rat (*Rattus norvegicus*). The study was conducted in two phases: the first phase of the deployment of questionnaires conducted in five districts in Bali to determine the type and frequency of arak bali consumption and phase II made arak bali giving treatment in experimental animals. This study used 24 male rats (170-200 grams), divided into four groups: one control and three treatments (by arak bali containing 40% alcohol as much as 0.1 and 0.5 mL and 0.1 mL much alcohol synthesis, for 45 days. the results showed that of the five districts in Bali, most people consume arak bali commercial and most of the frequency of consumption of the week more than one bottle (350 mL). the provision of arak bali in experimental animals, degrade the quality (morphology, motility, viability, membrane integrity), the greater the volume given declining spermatozoa quality. (FMI 2016;52:235-240)

Keywords: arak bali, the quality of sperm (morphology, motility, viability, membrane integrity), rat (*Rattus norvegicus*)

INTRODUCTION

Arak Bali is a traditional Balinese drinks that contain alcohol is high at 30-50%. Arak Bali is made from the fermentation of coconut water, fruit juice (palm), and water the rice, the most consumed and traded arak bali usually made from rice water. Processing of rice water into arak (wine) is commonly done by people in Bali, usually rice water used is water white glutinous rice is added to the starter or yeast. Fermented and then distilled by simple distillation apparatus, and will produce bioethanol (wine) (lempang 2006).

Arak Bali containing alcohol enters the body will undergo a series of biochemical processes. Alcohol is consumed will be metabolized by the liver enzyme alcohol-assisted dehydrogenase (ADH) and coenzyme nicotinamide-adenine-dinokleotida (NAD) into acetaldehyde, and then by the enzyme aldehyde dehydrogenase (ALDH) is converted into acetic acid. Besides fat-soluble alcohol can easily cross the cell membrane,

through the mechanism of protein oxidation and lipid cell membranes, causing increased respiration activity of cells that contributes to the high levels of ROS can damage the structure and function of cells. (Zakhari 2006). Excessive alcohol consumption in men can cause fertility problems through low number and motility of spermatozoa (Maneesh et al 2006). Number and motility of spermatozoa indicate decreasing quality of spermatozoa, which in turn leads to infertility.

Thus it is necessary to do research on sperm fertility test to see quality include motility, morphology, viability and membrane integrity of spermatozoa to the experimental animals (rats) with the provision of the volume variation arak bali drinks containing alcohol.

MATERIALS AND METHODS

This research was conducted in two stages: the first step of distributing questionnaires in five districts in Bali,