



Material and Methods

Arum Tri W

24 June, 2016

The methods section

- Salah satu komponen vital pada sebuah laporan lab → Instruksi bagi peneliti lain yang akan mengulang eksperimen yang sama.
- Menerangkan bagaimana dan kapan (dan dimana) sebuah eksperimen dilakukan
- it is often a good idea to begin by writing the Materials and Methods section

General structure: example

2.1. Chemicals and Materials. Analytical grade methanol (MetOH) (EMSURE®) was purchased from Merck (Darmstadt, Germany). Absolute ethanol (EtOH) was purchased from Fisher Scientific (Malaysia). H9c2(2-1) cardiomyocytes of *Rattus norvegicus* rat (ATCC® CRL-1446™) were purchased from ATCC. CellTiter 96® Aqueous Non-Radioactive

Menjelaskan material yg digunakan

2.2.1. Preparation of Rice Bran Extracts (RBEs). Preparation of RBE was carried out at a sample-mass-to-solvent ratio of 1:10 (gram to millilitres), using 3 g of rice bran and 30 mL of analytical grade methanol. The mixture was stirred continuously on a stirring hot plate (Stirring Hot Plate HS0707V2, Favorit) for 30 minutes, at room temperature.

- Jelaskan organisme yang digunakan
- Desain penelitian / sampling

2.7.1. Total RNA Extraction. Extraction of RNA from H9c2(2-1) cardiomyocytes was performed through AxyPrep Multi-source Total RNA Miniprep Kit (Axygen Biosciences). Prior to RNA extraction, supernatants were discarded and cells were washed twice with ice cold PBS buffer (pH 7.4). Then, the extraction of RNA from cells was performed as described in the kit protocol. RNase-free water was used to elute the purified total RNA. RNA samples were kept on ice when in use or stored at -80°C until further use.

Narasikan protokol secara detail

General structure: example

2.8. Statistical Analysis. All results data are presented as mean and standard deviation of three consecutive technical repetitions on the statistical tool; GraphPad Prism (GraphPad Software, Inc., USA) was used to analyse the data via one-way analysis of variance (ANOVA) and Student's *t*-test. Statistical significance and confidence level of data are set at $P \leq 0.05$.

Jelaskan bagaimana data Anda dianalisis

Field study:

- Jelaskan lokasi dan waktu saat Anda melakukan eksperimen
- Membuat alur atau diagram kerja

Style

- Sub-headings; logically and orderly
- Past tense & the third person, Active or Passive voice
- New methods: detailed describe, established methods: mention the references

- Not a protocol:
Instead of writing:

First pour agar into six petri plates. Then inoculate the plates with the bacteria. Then put the plates into the incubator . . .

Simply describe how the experiment was done:

Six petri plates were prepared with agar and inoculated with the bacteria. The plates were incubated for ten hours.

Common problems

- Being wordy or overly detailed.

Problematic Example:

"The petri dish was placed on the turntable. The lid was then raised slightly. An inoculating loop was used to transfer culture to the agar surface. The turntable was rotated 90 degrees by hand. The loop was moved lightly back and forth over the agar to spread the culture. The bacteria were then incubated at 37° C for 24 hr."

Improved Example:

"Each plate was placed on a turntable and streaked at opposing angles with fresh overnight E. coli culture using an inoculating loop. The bacteria were then incubated at 37° C for 24 hr."

Best:

"Each plate was streaked with fresh overnight E. coli culture and incubated at 37° C for 24 hr."

- Avoid using ambiguous terms to identify controls or treatments, or other study parameters that require specific identifiers to be clearly understood.

Problematic example:

"A Spec 20 was used to measure A600 of Tubes 1, 2, and 3 immediately after chloroplasts were added (Time 0) and every 2 min. thereafter until the DCIP was completely reduced. Tube 4's A600 was measured only at Time 0 and at the end of the experiment."

Improved example:

"A Spec 20 was used to measure A600 of the reaction mixtures exposed to light intensities of 1500, 750, and 350 $\mu\text{E}/\text{m}^2/\text{sec}$ immediately after chloroplasts were added (Time 0) and every 2 min. thereafter until the DCIP was completely reduced. The A600 of the no-light control was measured only at Time 0 and at the end of the experiment."

Take home message

a well written Materials and Methods section also serves as a set of instructions for anyone desiring to replicate the study in the future.