

# Antihypertensive Activities Instant Granul of Combination Extract Roselle Flower Petals (*Hibiscus sabdariffa* L.), Chayote Fruit (*Sechium edule* (Jacq.) Sw.) and Aloe Vera Leaves (*Aloe Vera* L.) In White Male Rats

Shafirany M.Z.<sup>1</sup>, Susilawati Y.<sup>1\*</sup>, Muhtadi A.<sup>2</sup>, Milanda T.<sup>1</sup> and Chaerunissa A.Y.<sup>3</sup>

1. Department of Biological Pharmacy, Faculty of Pharmacy, Padjadjaran University, INDONESIA

2. Department of Pharmacology, Faculty of Pharmacy, Padjadjaran University, INDONESIA

3. Department of Pharmaceutical and Pharmaceutics Technology, Faculty of Pharmacy, Padjadjaran University, INDONESIA

\*yasmiwar.usie@gmail.com

## Abstract

Hypertension is a condition where the systole blood pressure greater than 140 mmHg and diastole blood pressure greater than 90 mmHg. The previous study showed that the combination of roselle flower petal (*Hibiscus sabdariffa* L.), chayote fruit (*Sechium edule* (Jacq.) Sw.), aloe vera leaf (*Aloe vera* L.) extracts can reduced high blood pressure better than its single herb extract. The purpose of this research is to determine the optimal dose of instant granules from a combination of extracts of roselle flower petals (*Hibiscus sabdariffa* L.), chayote fruit (*Sechium edule* (Jacq.) Sw.), aloe vera leaf (*Aloe vera* L.) on white male rats *Rattus norvegicus* Sprague Dawley that induced with adrenaline 1.2 mg/kg BW intraperitoneally using Non-Invasive Blood Pressure method.

The instant granule suspension preparation is administered orally at doses 0.5 g/200 g BW, 0.75 g/200 g BW and 1 g/200 g BW. The results showed that at the significance level of 0.05, all the instant granule doses tested have an activity of reduction of systolic and diastolic blood pressure, respectively 30.27% and 31.86%, 21.77% and 21.27%, 18.39%, and 23.05%.

**Keywords:** Hypertension, *Hibiscus sabdariffa* L., *Sechium edule* (Jacq.) Sw., *Aloe vera* L., Non-Invasive Blood Pressure.

## Introduction

Hypertension is the most common cardiovascular disease. The prevalence of this disease increases with age. Increased arterial pressure causes pathological changes in vascular tissue and left ventricular hypertrophy<sup>4</sup>. Hypertension is a condition in which a systolic blood pressure greater than 140 mmHg is accompanied by a rise in diastolic blood pressure greater than 90<sup>10</sup>.

According to WHO in the 2013<sup>17</sup>, Hypertension is a global problem with a high number of patients. In the worldwide,

about 40% of adults aged 25 years or over have been diagnosed with hypertension. The number of hypertensive patients increased from 600 million in 1980 and approached one billion in 2008. According to the Basic Health Research (RISKESDAS) 2007<sup>2</sup>, the prevalence of hypertension in Indonesian population with an age range of 18 to 29 years was 29.8%, the regions with the highest hypertension prevalence incident were Natuna (53.3%), Mamasa (53.6%), and Wonogiri (49.5%).

The usage of common antihypertensive drugs such as thiazide diuretics, adrenergic receptor blockers, calcium channel inhibitors, and angiotensin-converting enzyme inhibitors are always followed by adverse side effects. These side effects include vertigo, depression, congestive heart failure, gastrointestinal disorders and even an increased risk of diabetes<sup>5</sup>. Therefore the public is more interested in using medicines derived from natural ingredients with lower side effects because people suffering from hypertension will use the drug for the rest of their lives<sup>14</sup>.

Plants as medicinal ingredients have been exploited by the Indonesian society since the ancient time, one of the herb that are widely used as the ingredients of medicine today are roselle flowers. In traditional medicine, roselle petals extract is used to treat several diseases, including high blood pressure, liver disease and fever. In rats and rabbits, roselle petals extract showed antihypercholesterolemia, antinociceptive and antipyretic and showed antihypertensive activity<sup>1</sup>. Based on research conducted by Faraji and Tarkhani (1999)<sup>3</sup> that patients given intravenous *Hibiscus sabdariffa* L. After 12 days, systolic blood pressure decreased by 11.2% and diastolic by 10.8% compared to blood pressure before administration. The results also showed that high anthocyanin content in roselle petals extract (*Hibiscus sabdariffa* L.) significantly reduced blood pressure and reduced plasma ACE (Angiotensin Converting Enzym) in hypertensive patients<sup>6</sup>.

In addition, the chayote squashes (*Sechium edule* (Jacq.) Sw.) are an ingredient of vegetable that is empirically used to lower blood pressure. The Community has already recognized the chayotes not only as a food ingredient that is processed into various variations of cuisine, but also as a