EFFECTIVENESS TEST OF THE COMBINATION OF ETHANOL EXTRACT OF MIANA LEAVES (COLEUS SCUTELLARIOIDES (L.) BENTH) AND PEGAGAN LEAVES (CENTELLA ASIATICA (L.) URB) AS ANTIBACTERIAL AGAINST STREPTOCOCCUS PNEUMONIAE AND *KLEBSIELLA PNEUMONIAE* CAUSING COUGH

Kasih Karunia, Afica Prisca Pandin, Sesilia R. Pakadang
Makassar Ministry of Health Polytechnic
Corresponding author: kasihkarunia501@gmail.com

ABSTRACT

Miana leaves (Coleus scutellarioides L, Benth) and Pegagan Leaves (Centella asiatica L Urban) have been used by the societies as cough suppressants. Cough-causing bacteria include Streptococcus pneumoniae and Klebsiella pneumonia. Our study objective is determine inhibitory power of Miana Leaves Extract and Pegagan Leaves extract combination on the growth of Streptococcus pneumoniae and Klebsiella pneumoniae. The samples have been used in this study were Streptococcus pneumoniae and Klebsiella pneumoniae, and the simplicia as the test materials were Miana Leaves and Pegagan Leaves obtained from Makassar City. Inhibitory zone Streptococus pneumoniae Miana Leaves Extract (MLE) 50mg by 9.33mm, Pegagan Leaves Extract (PLE) 50mg 9.33mm, MLE 50mg: PLE 50mg 16mm, MLE 50mg: PLE 100mg 13.66mm, MLE 100mg: PLE 50mg 13.66mm, while the negative control using Sodium CMC does not have a zone of resistance. The inhibitory power for Klebsiella pneumonia is MLE 50mg 11.33mm, PLE 50mg 11mm, MLE 50mg: PLE 50mg 17.33mm, MLE 50mg: PLE 100mg 12 mm, MLE 100mg: PLE 50mg 13mm, negative controls using Sodium CMC there are no inhibitory zones. The results of the study concluded that the combination of Miana Leaves extract and Pegagan Leaves has a good inhibitory effectiveness compared to its own use.

Keywords: Miana, Pegagan, Effectiveness, Streptococcus pneumoniae Klebsiella pneumonia

INTRODUCTION

Cough is a disease that many people complain about, both children and adults are very susceptible to coughing. cough is caused by bacterial infection, including *Streptococus pneumoniae* and *Klebsiella pneumoniae* (Ibrahim, 2012).

Efforts to treat cough that are widely used are drugs derived from synthetic drugs. In addition to synthetic drugs, many people also use natural ingredients in the form of medicinal plants that have traditionally been used as cough medicines. Indonesia is rich in various types of plants that can be used as food, which also functions as traditional medicine. Original Indonesian medicine has been known for a long time, long before formal health services with modern medicines that are used now by the public at large. However, nowadays the community prefers to return to nature to avoid the negative effects caused by consuming chemical drugs in the long run. The advantages of herbal medicines such as lack of side effects, cheap and easily obtained allow many people to entrust themselves and their families' health to traditional medicines.

The most commonly detected pathogens in cough are bacteria such as *Streptococcus pneumoniae, Haemophillus influenzae, Staphylococcus aureus*, and *Klebsiella* species (Ibrahim, 2012).

Plants that are often used by the community as cough medicines, including the Miana Leaves and Pegagan Leaves and several other plants. Several studies have shown the activity of Miana and Pegagan as cough medicines in this case can inhibitory and kill cough-causing bacteria, including research conducted by (Pakadang, 2017) on the Activity of Miana Leaves on the growth of *Streptococus pneumoniae* and research conducted by (Dewi, 2012) namely Pegagan Leaves proved to inhibitory the growth of *Streptococus pneumoniae*. Based on the description above, a study was conducted on the treatment of cough using a combination of Miana Leaves (*Coleus scutellarioides* (L.) Benth) and Pegagan Leaves (*Centella asiatica* (L.) Urb) as cough medicines tested on *Streptococus pneumoniae* and *Klebsiella pneumoniae*.

METHOD

Miana leaves and Pegagan leaves obtained in Makassar are extracted by maceration method because the plant parts taken are leaves. The leaves are very suitable to be extracted by the maceration method because they have soft parts and are relatively heat resistant.

RESULT AND DISCUSSION

Tabel 1.
The measurement results of the inhibitory zone of Miana Leaves extract and Pegagan Leaves on the *Streptococus pneumoniae*

Replication	Treatment group / resistance zone diameter in units of millimeters (mm)						Total
	Miana 50 mg	Pegagan 50 mg	MLE:PLE 50:50	MLE:PLE 50:100	MLE:PLE 100:50	K(-)	
1	9	10	15	12	14	0	
2	10	9	18	15	14	0	
3	9	9	15	11	13	0	
Total	28	28	48	38	41	0	183
Average	9,33	9,33	16	12,66	13,66	0	

Tabel 2.
The results of the measurement of the inhibitory zone of Miana Leaves extract and Pegagan Leaves on the *Klebsiella pneumoniae*

Replication	Treatment group / resistance zone diameter in units of millimeters (mm)						Total
	Miana 50 mg	Pegagan 50 mg	MLE:PLE 50:50	MLE:PLE 50:100	MLE:PLE 100:50	K(-)	
1	12	11	18	12	14	0	
2	11	11	16	12	12	0	
3	11	11	18	12	13	0	
Total	34	33	52	36	39	0	194
Average	11,33	11	17,33	12	13	0	

DISCUSSION

Streptococus pneumoniae and *Klebsiella pneumoniae* are cough-causing bacteria. Cough affects bacterial infections. Efforts to treat cough that are widely used are drugs taken from synthetic drugs. However, today people prefer to return to nature to avoid the negative effects caused by chemical drugs in the long run. Superior herbal medicines such as side effects, cheap and easily obtained by people who entrust their personal health and budget to traditional medicines.

Plants that are often used by the community as cough medicine are Miana Leaves and Pegagan Leaves and several other plants. One of the plants that can cure a disease known as Miana. This plant in Indonesia is known as Miana (iler). This herb is planted wild in gardens and is commonly used as an ornamental plant. In some Miana Leaves areas are used as complementary foods (vegetables), for example in the Toraja area. Toraja people have used Miana Leaves as a complementary food (vegetables) and also often use this plant as a cough medicine.

Pegagan (*Centella asiatica* Urb) is a medicinal plant that is rich in benefits. As in its use it is used as a cough medicine, tuberculosis, sore throat, bronchitis and as an antibacterial (Mora and Fernando, 2012). This plant has a chemical content, namely asiatikosida, asiata acid, madekasat acid. Steroids (madecasoid, sitosterol, and sigmasterol) and saponins (brahmosida, brahminosida, and valerian). One composition in the extract that has antibacterial properties is the asiaticoside compound which belongs to the triterpenoid

group. (Rasyid, et al 2011)

The results of the study showed that the use of a combination of Miana Leaves Extract and Pegagan Leaves extract was more effective in inhibitory the growth of *Streptococus pneumoniae* and *Klebsiella pneumonia* bacteria than in full use.

Miana Leaves Extract and Pegagan Leaves as antibacterial *Streptococus pneumoniae* and *Klebsiella pneumonie* because of Miana plants using flavonoids. Flavanoids are the most dominant phenol group in plants as well as miana, which functions as an antibacterial (Cushnie TPT and Lamb AJ, 2005). While the Pegagan plant contains asiaticoside which belongs to the triterpenoid group which is proven to be used as an antibacterial (Rasyid, 2011)

CONCLUSION

The results of research that has been done on the effectiveness test of the combination of Miana Leaves extract (*Coleus scutellarioides* (L) Benth) and Pegagan Leaves (*Centella asiatica* (L) Urb), it can be concluded that the use of a combination of Miana Leaves extract and Pegagan Leaves is more effective in inhibitory bacterial growth *Streptococus pneumoniae* and *Klebsiella pneumonia* compared to their use alone.

REFERENCES

Alsagaff H and Mukty HA 2008. Basics of Lung Disease. Airlangga University Press, Surabaya.

RI Food and Drug Administration, 2011. Reference to herbal preparations. Jakarta BPOM RI

Besung, I. N. K. (2009). Gotu Kola (Cantella asiatica) as an alternative prevention of infectious diseases in the Udayana Veterinary Bulletin cattle, I (2), 61-67

Cushnie TPT, Lamb AJ. Antimicrobacterial Activity of Flavanoids. Int J Antimicrob Agents. 2005; 26: 343-356

Dalimartha, S. 2008. Plant Atlas of Indonesian Medicine Volume 5. Mother Library, Puspa Swara Group, Member of IKAPI. Jakarta

Dewi, SS. (2015) Inhibition of Ethanol Extract of Gotu kola Leaf (Cantela asiatica) Against the Growth of Methicillin-Resistant Staphylococcus aureus Isolate from sputum of pneumoniae sufferers. Aceh

Ministry of Health of the Republic of Indonesia, 2008, Indonesian Herbal Pharmacopoeia, Edition IV, Ministry of Health of the Republic of Indonesia

Jawetz, et al. 2005. Microbiology for Health Professionals, Edition 16. Jakarta: Salemba Medika.

Indonesian Ministry of Health, 2010. Indonesian health profile in 2009. Jakarta: RI Ministry of Health

Kumala, S. (2009) Antibacterial activity of Daun Iler extract (Coleus atropurpureus (L) Benth) against several gram (+) and bacterial gram (-) bacteria, Indonesian Natural Materials Journal vol 7 no.1 Page 12-14

Mora, E., and Fernando, A. (2012). Optimization of total Gotu Kola Triterpenoid Extract (Centella asiatica (Linn.) Urban) grown in Riau. Indonesian Pharmacy Research Journal, I (1), 11-16.

Pakadang, SR., 2017, Treatment of Phlegm Cough with In Vitro Miana Leaf Extract. Makassar

Permadi A. (2008) Making a Medicinal Plants Garden, mold I. Publishers of the Library of the Mother of the Puspa Swara Group. Jakarta. Page 25, 27

Priyanti Z.S, Marase L, Ida B. 2005. Pneumonia Communities, Guidelines for Diagnosis and Management in Indonesia. Jakarta: Indonesian Lung Doctors Association.

Radji M, 2011. Textbook for Microbiology Guidance on pharmaceutical students and medicine, Jakarta, Medical Book Publisher EGC.

Rasyid, R., Mahyuddin, and Agustin, M. (2011). Examination of potassium and sodium levels on Centella asiatica (L) Urban herbs with flame photometry method. Pharmacy and Health Journal, I (2), 13-17

Ringel, E., Approach to patients with pulmonary disease. In: Onion DK, editor. Pocket Book Black Lung Medicine. Interpreting, Melfiawati. Jakarta: PT Indices, 2009; p. 10.