



Chapter I

Introduction

Communicable diseases of the respiratory tract were a major cause of morbidity and mortality throughout the world; They accounted for as many as 2.2 million deaths annually, infancy being the time of greatest risk (Pringle, 1987). Viral agents were estimated to be responsible for over 90% of cases of community-acquired acute diseases of the upper respiratory tract. Acute respiratory infection (ARI) of viral origin may be complicated (or accompanied) by bacterial infection. (World Health Organization (WHO), 1984)

Among the bacteria, *Streptococcus pneumoniae* and *Haemophilus influenzae* were the most frequent agents of pneumonia in young children. *H. influenzae* also caused croup. *Streptococcus pyogenes* was important as a cause of pharyngotonsillitis with a risk of subsequent development of rheumatic fever, heart disease, nephritis, and permanent damage to the kidneys, especially in children of 5-12 years of age (WHO, 1984). On the other hand, *Staphylococcus aureus*, Gram negative enteric bacilli, and *Pseudomonas* species were involved in other upper respiratory infections such as tonsillitis, otitis and sinusitis (Wilson, Mizer and Morello, 1979). Therefore, the use of antibiotic drugs was important in the treatment of these infectious diseases.

It was commonly assumed that a substance designated as an antibiotic must necessarily have been elaborated by a living organism. However, antibiotics were not only confined to microorganisms, but were also found in higher plants and

animals. Within the past forty years, several surveys for antimicrobial substances of higher plants have been conducted by a number of investigators. Starting in 1943, Osborn (quoted in Kshirsagar and Mehta, 1972) reported his classical studies on antimicrobial substances from green plants. Since then voluminous literature has accumulated on this subject (Kshirsagar and Mehta, 1972; Mitscher et al., 1972; Bhakuni et al., 1974; Leven et al., 1979; Puangnoi Lohakachornpan, 1979; Areerat Laopaksa, Surattana Amnouypol, and Vichien Jongbunprasert, 1988). However, many of these reports presented only preliminary data on the activity of crude extracts.

According to this evidence, the plant samples, claimed to be effective in the treatment of respiratory tract infections were selected (Sopit Dhamaree and Monthira Tungayoon, 1982; Areerat Laopaksa and others, 1988). It may be possible, with anticipation, to find the new active constituents responsible for antibacterial activities on the microorganisms which cause the upper respiratory tract infection.

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