THE TREATMENT OF INSOMNIA IN PATIENTS OF 4 HOSPITALS IN GUAYAQUIL, ECUADOR USING TWO NOVEL HERBAL EXTRACTS: A DOUBLE-BLIND, RANDOMIZED, MULTIPLE CROSSOVER, PLACEBO CONTROLLED, MULTICENTER STUDY

Evaluation of the Effectiveness of Babuna and Amantilla in the Treatment of Insomnia in Outpatients of the *Hospitales del Día* "More Health Plan", of the M. I. Municipality of Guayaquil, Ecuador.

SUMMARY

The statistical percentages of healthy or sick persons suffering from insomnia are very high. Effects of lack of sleep are quite variable, from simple irritability to hallucinations; there are marked neurological effects. The causes of insomnia are varied and have been divided according to their nature into: difficulty falling asleep, difficulty maintaining sleep, early awakening, and non-restorative sleep despite having slept an adequate number of hours. The majority of people who suffer from insomnia may suffer from more than one category.

The Municipal Administration of Health and Hygiene provides primary care services and agreed to allow the use of the facilities of its *Hospitales del Día* units to carry out this study. Previous to the study, which is between the 5th and the 9th of September of 2005, qualitative interviews were conducted which found a 56.6% prevalence of insomnia in patients receiving care in the above-referred units.

Amantilla and **Babuna** are natural medicines, originating from the extraction of the active principles of the valeriana plant (Valeriana officinalis) and of the flower of the manzanilla plant (recutita Matricaria) respectively; the same that contain properties which have been credited for the treatment of insomnia.

The study lasted three weeks. The patients were randomly divided into three groups of 36 each, and were administered 15 drops of Babuna, 15 drops of Amantilla, or 15 drops of a placebo depending on the group. The medication or placebo was dissolved in 60 cc of water and administered orally 30 minutes before bedtime.

Neither the patients, the treating physicians, nor the support personnel, knew the content the packages; inclusion and exclusion criteria are defined in the study protocol; the patients signed a consent form after receiving information about the study. A survey of 25 questions was created to determine the possible causes of

insomnia. The data of the patients who report effectiveness was collected separately.

We collected the following data from the study that took place during the diagnosis of the patients who started the study: 84.3% report that they wake up more than once during the night; 56.1% have had insomnia for more than one year; 38.2% have taken herbal remedies to help with sleep; 33% report having taken medicines (prescribed or over the counter) to sleep; 17.6% say that they drink more than one cup of coffee a day; 76.5% experience an excess of stress or anxiety; 41.2% say that they watch TV before going to sleep; 82.4% report worrying too much about sleep; and 53.9% have aches or pains that prevent them from sleeping.

The study is described as experimental, multicentric, randomized, double blind, and placebo controlled; for a universe of 79806, with a standard error no greater than 0.15, and with a probability of occurrence of 97.5% and a sample size of 108 patients, the average percentage of effectiveness for each product is: 82.5% Amantilla and 68.8% Babuna.

OBJECTIVES

To evaluate the effectiveness of **Babuna** and **Amantilla** in the treatment of insomnia in outpatients of the *Hospitales del Día* "More Health Plan" of the M.I. Municipality of Guayaquil, Ecuador.

BACKGROUND

Sleep is a complex biological function with marked individual variations in depth and duration. The average total sleep time is 7.5 hours, but the range among healthy adults is 4 to 10 hours. (15)

Total sleep time is highest in infants, diminishes to adult levels after growth is completed, and declines in old age. (15)

Although sleep and its alterations have intrigued man since its beginnings, Sleep Medicine has developed only in the last decades, a new specialty that has grown perhaps larger than ever in the last few years. These specialists study and specifically treat all types of sleep variances. (14)

Anyone can recognize the importance of sleep. Personal experience shows that a good night's sleep translates into waking up refreshed. On the other hand, a reduction in sleep time has a very unfavorable impact on daily activities. During sleep we achieve a complete physical and psychic repair. Thus, those who spend the night in bed but without sleep will not be refreshed. (14)

Although one knows and is accustomed to the idea that sleep takes a third of our lives, its affects were largely ignored by medicine. The importance of normal sleep is obvious, and its excess as well as its deficiency has marked repercussions in daily life. (14)

PHYSIOLOGICAL MECHANISMS OF SLEEP

The sleep cycle is influenced by two biogenic amines: 5-hidroxitriptamine (serotonin) and norepinefrine, as well as by acetylcholine. (15)

Two general hypotheses have been proposed concerning the control of sleep by neurotransmitters. In the 1960's, based on experimental work, Jouvet presented an important paper concerning the role of serotonin in the induction of NREM sleep and presented proof that norepinefine played a role in the transition of NREM sleep or REM sleep. More recently, Hobson and collaborators have invoked a change in the cholinergic and biominergic tonic activity of the cerebral stem to explain the cycles of the dream.

EFFECTS OF THE LACK OF SLEEP

Human beings deprived of dream NREM and REM during periods of 60 to 200 hours suffer from increased fatigue and irritability and cannot concentrate. Illusions and hallucinations penetrate the conscience, mainly in the sensorial, visual and tactile fields, becoming more intense as the period of lack of dream extends. Yield of motor tasks deteriorates. Motivation declines and activities are interrupted by lapses in attention. Neurological signs include light, rapid eye movements, a slight hand tremor, ptosis of the eyelids, and slowness of speech, with defects in pronunciation and incorrect selection of words.

Recuperation after a prolonged episode of sleep deprivation shows that the quantity of sleep required for recuperation is never equal to that lost. (15)

SLEEP ALTERATIONS

Sleep alterations can appear in any period of life. Some are particular to specific age groups, like nocturnal enuresis, night terrors and sleep walking in children and adolescents, and the insomnia and oversleeping in the adulthood and advanced age. Others, like narcolepsy-cataplexy syndrome, can begin in childhood and persist during one's entire life. (15)

Data on the prevalence of sleep upheavals are spotty, but it seems that between 8 and 15% of the adult population in the United States suffers from frequent or chronic disturbances in the quality and the amount of sleep. (15)

Between 3 to 11% of adults use sedatives or hypnotics, and the percentage increases with age. Sleep disturbances are an important problem both in terms of frequency and the tendency toward excessive drug use, as well as the fact that a greater risk of mortality in people with chronic sleep deprivation has been verified. (15)

Statistics demonstrate that between 20% and 40% of Spanish people suffer from insomnia, 17% in a serious form. Numbers indicate that spending the night awake and the day yawning is already the symptom of an increasing epidemic in all developed countries. (12)

The United States is, in this case, the reflection of the insomnia: 70 million North Americans have sleep problems, and according to two studies of the National Sleep Foundation, 50 million of them suffer some of the 88 upheavals described regarding sleep. There are a sufficient number of patients so that none of the 365 clinics that study sleep have gone broke. In Spain, within the Insalud network, 30 hospitals are equipped to carry out these types of study. (12).

The results of a study done in Argentina, whose intention was to determine the appearance of difficulty falling asleep and staying asleep in patients with chronic kidney failure from the beginning of the treatment (dialysis), and without previous antecedents of sleep disturbances, demonstrate that: of 48 patients (100% of the interviewed people), 41 (85%) presented/displayed some type of insomnia; of them 4 (8%) demonstrated difficulty maintaining sleep; 9 (19%) difficulty staying asleep; and 28 (58%) both types of insomnia.

In 85% of the cases the insomnia becomes serious the previous night to the dialysis (88% of men and 80% of the women).

88% of patients cite as the onset of their sleep disturbances the beginning of dialysis.

Insomnia is the most common sleep disturbance in the United States. Its prevalence has been estimated at approximately a third of the adult population. Insomnia is 1.3 times more frequent in women than in men, and its incidence increases with the age, given that it is 1.5 times more frequent in individuals 65 years of age or older than in the younger population (1).

INSOMNIA

The term insomnia, described as a lack of sleep, is popularly used to indicate any alteration in the duration, depth, or restorative property of sleep. The depth and duration of sleep are so variable and the complaints of insomnia so widespread that it becomes difficult to investigate when one should consider as anomalies these complaints of too little sleep. Insomnia can present itself as the principal or disturbance or may coincide with other sleep disturbances, such as symptoms of hyperventilation or apnea. Insomnia may also be a secondary manifestation of personality changes, psycho-neurosis, or anxiety, or may occur with drug or alcohol use. (15)

Insomnia also expresses itself as the subjective sensation of not being able to sleep when, or how much, one desires. It is the most common sleep disturbance; it has many causes, and varies in terms of its severity and duration from one patient to another. Most of the individuals with insomnia do not seek medical assistance or use drugs to sleep. (16)

To best control insomnia, the treatment will have to be based on the symptoms displayed by the patient. There are three types of disturbances.

Sleep disturbances have traditionally been divided according to their nature: insomnia of conciliation (difficulty falling asleep), insomnia of maintenance (frequent or prolonged awakenings), early awakening (patients who wake up earlier than desired) and non-restorative sleep in spite of having slept an adequate number of hours. It is important to note that most people who suffer insomnia suffer from more than one type. (1)

In 1984 the National Institutes of Mental Health's Consensus Conference divided insomnia into transitory (fewer than two weeks), occasional or short-term (between one and three months), and chronic (three months or more in duration). (1)

Insomnia is a heterogeneous condition and can be caused by a variety of factors. Among the causes of transitory and occasional insomnia we have: changes in sleep environment, changes in work schedule, excess noise, events that produce stress like loss of a partner or relative, job loss, acute medical or surgical disease, and medication. Chronic insomnia can be caused by the chronic use of drugs or alcohol, a variety of medical or psychiatric disturbances, and varying primary sleep disturbances. Therefore, establishing the underlying condition is fundamental for adequate therapy (1).

The consequences of insomnia have been widely studied. An association between a deterioration of the quality of life and insomnia has been demonstrated. Most people who suffer from it complain of deterioration in their daily productivity, fatigue, difficulty concentrating, memory problems and mood

disturbances. The insomniac is at a greater risk of having difficulties with studies, work and interpersonal relations (1).

People who experience symptoms of insomnia comment that:

- They have difficulty falling asleep
- They awake frequently during their sleep
- They awake too early and cannot fall back asleep
- They awake without feeling refreshed

THE UNITS WHERE THE STUDY WILL BE CARRIED OUT

The Municipal Administration of Health and Hygiene and its "More Health Plan", provides primary care to the individual, family, and community, having as its mission to promote, foment, prevent, and to educate the population in topics related to health, thus avoiding the proliferation of disease and mortality. These activities are based on solidarity with those who are most in need, as a fundamental principal of action of the last municipal administrations.

Health is a right of the people, and in Ecuador there has not been sufficient coverage on the part of the central Government, and thus this constitutional obligation is not sufficiently carried out. Many illnesses, above all those attributable to poverty, are quite prevalent. This has motivated the M.I. Municipality of Guayaquil to intervene in the health sector, emphasizing primary care, providing for its inhabitants a service of mobile clinics, and soon day clinics and permanent campaigns of promotion and prevention.

The general objective of the M.I. Municipality of Guayaquil, in the area of health, is to improve the quality of life of the inhabitants of the Guayaquil canton, covering basic needs with complete medical, orthodontic, and veterinary services.

Day clinics of the M.I. Municipality of Guayaquil are located at:

- Hospital Cisne 2. Febres Parrish. Cordero, La 8ava y la Ch. Telephone: 2664263.
- Hospital Dr. Angel Felicísimo Rojas. Km. 11 ½ Vía s Daule; Avenida Modesto Luque Parque California. Telephone: 2100430.
- Hospital Kartódromo. Guasmo Norte Cooperativa Primero de Mayo Independiente; behind Fundación Huancavilca. Telephone: 2481341
- Hospital Isla Trinitaria. Isla Trinitaria South side, Cooperativa Monseñor Leonidas Proaño, in front of Trinipuerto. Telephone: 2600069

The above units conducted 141,150 medical consultations during the period between January and December 2004, with the following morbidities:

- Respiratory 35.144
- Digestive 11.107
- Cardiovascular 9.475
- Genito-urinary 10.973
- Hematological 4.385
- Dermatological 9.232
- Osteo-arthritic, connective tissue 8.249
- Immunological 1.706
- Metabolic 10.124
- Infectious and Parasitic. 17.840
- Neurological, Internal Organs 2.358
- ObGyn 12.736
- Paludism and Dengue 85
- Minor Surgery 3.395
- Toxicological and others 3.088
- Others and Major Surgery 983

THE MEDICATIONS

Babuna is a natural medicine, originating from the extract of the active principles of the flower of the chamomile plant (Recutita Matricaria), the same to which sedative properties are credited and which is used in the treatment of insomnia. The literature reports that the flower of the chamomile plant is a safe product with no side effects or interactions with other medicines. (2).

According to researchers who have demonstrated that the herb depresses the central nervous system, the long history of chamomile as a sedative has a scientific basis. Try an infusion when you feel distressed, or add a handful of chamomile flowers to a hot bath (13).

There was a controversy when a report in the *Journal of Allergy and Clinical Immunology* declared that the chamomile tea can cause a potentially fatal allergic reaction called anaphylactic shock or anaphylaxis in people who are allergic to ambrosia. Immediately, conservative herbologists recommended to the millions of people with ambrosia allergy that they avoid chamomile. Defenders of the herb were outraged, and insisted that the herb had been defamed without justification (13).

In order to clarify the subject, researchers compiled all the reports of allergic reactions induced by chamomile from the universe of medical literature, which includes information between the years 1887 and 1982. The grand total: 0 deaths and 50 reactions, 45 by Roman chamomile and no more than 5 from the

German variety which is the most used. Chamomile is not detrimental to one's health. The Food and Drug Administration of the United States (FDA) includes chamomile among the herbs that it considers generally safe. (13)

Amantilla is a natural medicine, originating from the extraction of the active principles of the valerian plant (Valeriana Officinalis), the same one to which sedative properties are credited and which is used for the treatment of the insomnia. Valeriana is a traditional medicinal herb, used widely in patients with insomnia, and less commonly in patients with anxiety due to its sedative and hypnotic properties (10).

The pharmacological activity of its individual components has shown a direct sedative effect (valeric acid and valepotriatos) and the interaction with neurotransmitters like GABA (valeric acid and other unknown elements). (10).

Some clinical studies have demonstrated that 300-600 mg of Valeriana reduces the time it takes to fall asleep and improves the quality of sleep. For this reason it is indicated in the treatment of slight to moderate insomnia. However, supporting evidence for its use in the treatment of anxiety is limited. (10)

Valeriana in infusion or decoction form has two disadvantages: the flavor and scent, which induce nausea. For this reason its administration is usually in tablet form (which does not improve the scent) or fluid extract (25 drops before going to bed). (11)

Adverse effects of valerian are rare (migraine and gastrointestinal effects). No evidence exists as to the involution of the effect of valerian with the concomitant ingestion of alcohol, but the combination must be avoided. It can increase the potency of the sedative effects of barbiturates, anesthetic and other depressive agents of the SNC. (10)

In 1981, researchers discovered in valerian several water-soluble chemicals elements with apparent sedative properties, thus supporting its traditional use as a tranquilizer and sleep aid. In one experiment, researchers administered 400 mg of valerian root extract, or a placebo of similar appearance, to 128 people who suffered from insomnia. Those who ingested the herb were demonstrated to have achieved a considerable increase in the quality of their sleep without suffering from morning confusion. Other experiments have produced similar results. (13)

Some researchers have compared valerian with benzodiazepines; nevertheless, valerian is a much safer and gentler sedative. (13)

Animal experiments show that valerian produces anticonvulsive effects, which gives certain credibility to its traditional use as a treatment of epilepsy. Several studies indicate that the herb has certain anti-tumor effects similar to those of

mustard gas. It may be that someday it will play a role in the treatment of cancer. The FDA includes valerian in its list of herbs considered safe. (13)

The literature generally reports that valerian is a safe product and that there are no side effects or drug interactions (2).

RECENT STUDIES OF AMANTILLA AND BABUNA

Toxicological studies performed on rodents show that Babuna and Amantilla are non-toxic products and that when applied orally rodents do not demonstrate symptoms or signs of inflammation of the oral mucosa. These studies were carried out in the Department of Chemical Sciences of the University of Guayaquil. Additionally, the sedative effect of the product was demonstrated in rodents (3, 4, 6, 7). In addition, preclinical evidence exists that Amantilla and Babuna have verifiable sedative effects in rodents (5, 8).

There are reported cases of people who have successfully taken Babuna for the treatment from insomnia. Insofar as it is nontoxic and has demonstrated effectiveness, its use may be extended to all type of patients.

A recent study in patients in the male wing of the Hospital of Infectious Disease of the Ministry of Health showed that Babuna had a 71% effect in the patients who ingested it (9).

MATERIALS AND METHODS

The present research study will be submitted for approval to the ethics committee of the Municipal Directory of Health and Hygiene of the M.I. Municipality of Guayaquil. If it is approved, its principal investigator will be Dr. Alejandro Sáenz Ubilla, with the support of personnel from the below-named units of the *Hospitales del Día.*

The research study will be conducted with outpatients in the *Hospitales del Día* of the M.I. Municipality of Guayaquil who have been previously diagnosed with insomnia through interview and medical review, and who freely and voluntarily wish to participate in the present study and who sign the informed consent form (Appendix 1).

The study will last for three weeks and will begin the second week of September, 2005. Patients will be divided into three groups of 36 each, and will be administered products in the following manner:

	Week 1	Week 2	Week 3
Group 1	Amantilla	Babuna	Placebo
Group 2	Babuna	Amantilla	Placebo
Group 3	Placebo	Amantilla	Babuna

The medications will be labeled in a consecutive code (should be random and only one person should know the info), the first 36 Amantilla, the next 36 Babuna, and the remaining 36 placebo. Neither the treating physician nor the patient will know the content of the bottles; only the principal investigator and the coordinator of the study will be informed of the contents.

Group and hospital distribution will be the following:

	Hospital Cisne 2	Hospital A. F. Rojas	Hospital Kartódromo	Hospital Isla Trinitaria
Group 1	9	9	9	9
Group 2	9	9	9	9
Group 3	9	9	9	9

The interview questions will be evaluated on a 1 to 5 scale. If at least one of the four symptoms is marked as “sometimes” or above, the person is considered as suffering from insomnia or at risk of suffering.

The questions are:

(Appendix 2)

1. How often do you have difficulty falling asleep?

Always A lot Sometimes Rarely Never

2. How often do you awaken during the night?

Always A lot Sometimes Rarely Never

3. How often do you awaken too early and cannot fall back asleep?

Always A lot Sometimes Rarely Never

4. How often do you awaken not feeling rested?

Always A lot Sometimes Rarely Never

108 patients will be selected, grouped by age and according to the demographic distribution of the Guayaquil canton.

The interview will then continue as follows:

(Appendix 3)

Do you have difficulty falling asleep or staying asleep (insomnia)? Yes No

Do you awaken not feeling rested? Yes No

How often do you wake up during the night? Number of times

How long have you had this insomnia problem? Week Months Years

Have you taken over the counter medication for insomnia? Yes No

What medications have you taken for insomnia?
Name

Do you take herbal supplements or alternative medicines for insomnia?
Name

How many cups of coffee do you drink per day?

How many hours before bedtime do you drink your last cup of coffee?

How many sodas do you drink per day?

How many hours before bedtime do you drink your last soda?

How many ounces of liquor do you drink per day?

How many hours before bedtime do you drink your last ounce of liquor?

How many cups of beer do you drink per day?

How many hours before bedtime do you drink your last cup of beer?

How many glasses of wine do you drink per day?

How many hours before bedtime do you drink your last glass of wine?

Have you recently reduced your consumption of these products? Yes No

Do you experience much stress or anxiety? Yes No

How many total hours do you stay asleep in a 24 hour period? Hours

At what time do you usually fall asleep? Time

At what time do you usually get up from sleeping to start your day? Time

Describe your usual activities during the 3 hours just before going to bed?

Do you frequently change the time you go to bed (in turns)? Yes No

Do you sleep at inappropriate times and places? Yes No
Explain if No

Does your sleep schedule change drastically during the weekend? Yes No
Explain if Yes

Do you worry a lot about sleep? Yes No

Do you experience short periods of absence of breathing or snoring when sleeping? Yes No
If Yes Describe

Do you experience aches or pains that keep you from sleeping? Yes No
If Yes Describe

THE DATA TO BE EVALUATED WEEKLY AND BY GROUP ARE:

% de Effectiveness = (# of patients who report effectiveness / Total number of patients in the group) * 100

A clinical history of the patients will also be reported in which should be included: Age, weight, height, and diagnosis. In addition, all signs or symptoms of toxicity upon ingesting the product and its determination in time will be recorded.

INCLUSION CRITERIA

- All patients with sleep disturbances.
- All patients displaying anxiety.

EXCLUSION CRITERIA

- Patients with severe neuropathies.
- Patients with severe alternations in consciousness levels
- Patients with verified hepatic insufficiency
- Patients with acute or chronic respiratory insufficiency
- Patients taking sedatives or have taken sedative medications less than 2 weeks before the study starts
- Those who are unlikely to properly follow instructions during the study

The dosage to be administered is 15 drops of Babuna, or 15 drops of Amantilla, or 15 drops of the placebo according to the group and week, dissolved in 60 cc of water and administered orally 30 minutes before bedtime. The dosage is to be ingested 1 to 2 minutes after adding the drops to the water so that the mixture is homogenous.

The duration of the study is 3 weeks and will be initiated following the survey and positive diagnosis of insomnia, which will be noted in the clinical history of the patient.

Participating patients must sign an informed consent form.

Data from patients reporting effectiveness will be taken on the included form.

STUDY TYPE

Experimental, Double-Blind, Randomized, Multiple Crossover, Placebo-Controlled and Multicentered.

JUSTIFICATION

The *Hospitales del Día* plays an important social function in treating close to 140,000 patients annually. Within this universe, an important statistic is the prevalence of insomnia in patients attended to in the described units. From these criteria a preliminary evaluation was conducted, with the objective of obtaining the percentage of the indicator in reference.

With a universe of 141,000 patients annually, with a standard error no greater than 0.1 and a confidence interval of 0.96, we obtained a sample size of 383 persons; rounded to 400 patients (100 per hospital) who are 20 years or older, 50 percent male and 50 percent female.

Between the 5th and the 9th of September 2005, data was collected via a qualitative interview, putting the prevalence of insomnia at 56.6% in patients

attended to in the *Hospitales del Día* of the "More Health" Plan of the M.I. Municipality of Guayaquil.

QUALITATIVE SURVEY OF INSOMNIA

Mark the best answer for each of the following four questions. If at least one of the four questions is marked as "Sometimes", "A lot" or "Always", the person is considered to be suffering from insomnia or at risk of suffering from insomnia.

1. How often do you have difficulty falling asleep?

Always A lot Sometimes Rarely Never

2. How often do you awaken during the night?

Always A lot Sometimes Rarely Never

3. How often do you awaken too early and cannot fall back asleep?

Always A lot Sometimes Rarely Never

4. How often do you awaken not feeling rested?

Always A lot Sometimes Rarely Never

RESULTS

The study began with 103 patients diagnosed with insomnia of various types. The median age is 50 (+/- 27) years old, the mean age is 51, and the most frequent age (mode) is 50 years old; the percentage of women that began was 71.5% and men 28.5%. The age distribution is as follows:

Age Group	%
20-29	2.9%
30-39	11.9%
40-49	34.7%
50-59	27.7%
60-69	13.9%
70-79	8.9%

The average BMI (Body Mass Index) is 28.4, with 30.6% at normal weight, 27.4% overweight and 41.9% obese; the study finished with 81 patients. Causes of attrition, among others, were: removal for non-attendance of control consultations; pregnancies undetected in the diagnosis and voluntary withdraw.

We collected the following data from the research conducted during the diagnosis of the patients who started the study: 84.3% report that they wake up more than once during the night; 56.1% have had insomnia for more than one year; 38.2% have taken herbal remedies medicines to help with sleep; 33% report having taken medicines (prescribed or OTC) to sleep; the 17.6% say that they drink more than one cup of coffee a day; 76.5% experience an excess of stress or anxiety; 41.2% say that they watch TV before going to sleep; 82.4% report worrying too much about sleep; and 53.9% have aches or pains that prevent them from sleeping.

In accordance with the calculations of effectiveness, and applying the following formula:

% of Effectiveness = (# of patients who report effectiveness / total number of patients per group) * 100

We have the following results:

In Week 1, the group that took Amantilla reported a 76.6% effectiveness; in Week 1 the group that took Babuna showed an 56.0% effectiveness; and in the same week the Placebo group reported 38.5% effectiveness. For Week 2, the group that took Babuna reported a 76.7% effectiveness; and the groups that took Amantilla reported 85.7% and 85.0% effectiveness respectively. In Week 3, the Placebo groups reported 40.0% and 41.2% effectiveness, and the group that took Babuna 73.7% effectiveness.

The average percentage of effectiveness for each product is:

Amantilla 82.5%
Babuna 68.8%

The summary results may be seen in the following table:

	Week 1	**Week 2**	**Week 3**
Group 1	Amantilla **76.7%**	Babuna **76.7%**	Placebo **40.0%**
Group 2	Babuna **56.0%**	Amantilla **85.7%**	Placebo **41.2%**
Group 3	Placebo **38.5%**	Amantilla **85.0%**	Babuna **73.7%**

CONCLUSIONS

The study clearly shows that for the patients in the medical area of the *Hospitales del Día* of the M.I. Municipality of Guayaquil, the medicine Amantilla has a marked effect against insomnia. Babuna also has an affect against insomnia, but a little less than Amantilla.

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