# CLINICAL STUDIES RONCHOSTIM®

**Snoring**
**Dryness**
**Epistaxis**


Ronchostim®

/// AUDISTIMPHARMA

## WHY DO WE SNORE?

Snoring arises when breathing is obstructed. This can be caused by a cold or an anatomical irregularity in the nose or throat.
However, the most common cause of snoring is, that the muscles in and around the throat relax too much when we are asleep. This means that the opening in the throat becomes narrow and air has difficulty in passing. As one requires the same amount of air to the lungs the air intake speed increases. Pressure in the throat increases and the uvula and soft palate begin to vibrate. The noise produced by these vibrations is called snoring.
Therefore snoring is a sign of troubled breathing during sleep. The louder the snoring sound is, the narrower the opening in the throat is.

## IS SNORING COMMON?

Yes! Snoring is a common phenomenon which has existed for as long as people have slept. Calculations concerning the frequency of snoring show, it is so common, that there is a snorer in nearly every second home. Men are more frequent snorers than women. This difference has equalized during the years.

## SNORING CAN DISTURB A GOOD NIGHT'S SLEEP!

When you snore, your breathing becomes irregular and when sleeping this can cause a pause in breathing. These pauses can last up till 10 seconds and can be repeated many times during the night. You may not yourself notice these pauses – but your sleep has been disturbed. This means that your body does not get the rest it needs. The result is that you are tired when you wake up, which is not good for your health.

Research shows that snorers have an increased risk of suffering from various illnesses such as high blood pressure, coronary and brain hemorrhage. A well documented article regarding snoring is:

## BREATHING DISORDERS DURING SLEEP, «YOU CAN SNORE YOUR LIFE AWAY.»

*By National Institutes of Health, National Heart, Lung, and Blood Institute.*

This sounds more like a joke than a warning. But in fact, habitual loud snoring is the most common symptom of breathing disorders that occur during sleep. The person who snores not only sleeps restlessly, but also is at risk for serious disorders of the heart and lungs. Snoring can therefore be life threatening because it can lead to high blood pressure, irregular heartbeats, heart attacks and sudden death.

Normal breathing must continue at all times whether awake or asleep. The act of breathing is an automatic, highly regulated mechanical function of the body. In healthy sleeping individuals, most muscular and neural activities will slow or even shut down but respiration goes on under a neuromuscular «auto pilot». However, if something goes wrong with the auto pilot during sleep, breathing may become erratic and inefficient.

### *Understanding Sleep*

Sleep is a complex neurological state. Its primary function is rest and restoring the body's energy levels. Repeated interruption of sleep by breathing abnormalities such as cessation of breathing (apnea) or heavy snoring, leads to fragmented sleep and abnormal oxygen and carbon dioxide levels in the blood. Excessive daytime sleepiness and various disorders of the heart, lungs and the nervous system result.

In the 1950's scientists realized that sleep is not just a quiet state of rest. In fact, two stages of sleep occur with distinct physiological patterns-rapid-eye-movement sleep (REM) and non rapid-eye-movement sleep (NREM) or deep sleep. In normal sleep, REM occurs about 90 minutes after a person falls asleep. The two sleep stages recur in cycles of about 90 minutes each, with three non-REM stages (light to deep slumber) at the beginning and REM towards the end. The amount of sleep needed by each person is usually constant although there is a wide variation among individuals.

How sleep occurs and how it restores the body is not well understood. Scientists originally believed that sleep occurs because the brain lapses into a passive resting state from lack of stimulation. Another theory proposed that sleep occurs when the body generates and accumulates sufficient amounts of a «sleep-inducing substance.» However, research now suggests that sleep results when specific changes in brain function occur. By studying brain waves, scientists can define and measure various degrees, levels and stages of sleep.

Sleep consists of a rhythmic combination of changes in physiological, biochemical, neurophysiological and psychological processes. When the rhythm is disturbed or the individual processes are abnormal during sleep, a variety of sleep-related disorders may result.

***Sleep-Related Disorders***

Sleep-related complaints appeared regularly in medical literature in the beginning of the 19th century. However, from 1900 to the mid-1960s little was published in scientific journals about the «sleepy patient» except for an occasional report on the normal or abnormal aspects of sleep physiology. Recent developments of research techniques in neurobiology, molecular biology, molecular genetics, physiology, neuropsychiatry, internal medicine, pulmonary medicine and cardiology have allowed scientists to study the details of sleep. As a result, there has been an explosion in interest in understanding sleep and «sleep disorders.»

Some sleep-related disturbances are simply temporary inconveniences while others are potentially more serious. Sleep apnea is the major respiratory disorder of sleep. Other serious sleep-related disorders are narcolepsy and clinical insomnia. «Jet lag syndrome» caused by rapid shifts in the biological sleep-wake cycle, is also an example of a temporary sleep-related disorder. So are the sleep problems experienced by shift workers. Sleep apnea is the condition of interrupted breathing while asleep. «Apnea» is a Greek word meaning «want of breath». Clinically, sleep apnea, first described in 1965, means cessation of breathing during sleep.

Narcolepsy is a neurological disorder whose main symptoms in uncontrollable, excessive sleep, regardless of the time of day or whether the person has had enough sleep during the previous night. The other features of this disorder can include brief episodes of muscle weakness or paralysis caused by laughter and anger (cataplexy), paralysis for brief periods upon awakening from sleep (sleep paralysis), and dreamlike images at sleep onset (hypnagogic hallucination). Narcolepsy, which may affect several members of the same family, is a life-long condition. Medications help to reduce the symptoms but do not cure the disease.

Insomnia is the commonly experienced difficulty in falling asleep, remaining asleep throughout the night and the inability to return to sleep once awakened. Its causes may be physical or psychological and it may occur regularly or only occasionally.

Even a partial list of all the disorders caused by or associated with disturbed sleep adds up to 70 items. The costs to society due to loss of productivity, industrial accidents and medical bills are estimated to be over $60 billion. These staggering statistics led to the creation by the U.S. Congress in 1988 of a National Commission of Sleep Disorders Research. This group is charged with task of developing a blueprint for a national effort to reduce the medical and economic consequences of sleep disorders.

## LIKELY CANDIDATES FOR SLEEP-RELATED DISORDERS

Some of the people most likely to have or to develop a sleep-related disorder include:

- adults who fall asleep at inappropriate times and places (e.g. during conversation, lecturing, driving) and who exhibit nighttime snoring
- elderly men and women
- postmenopausal women
- people who are overweight, or have some physical abnormality in the nose, throat, or other parts of the upper airway
- night-shift workers
- people who habitually drink too much alcohol
- blind individuals who tend to develop impaired perception of light and darkness and have disturbed circadian rhythms, the cycles of biologic activities that occur at the same time during each 24 hours
- people with depression and other psychotic disorders
- Sleep and Breathing Disorders

In 1944 the important observation was made that ventilation (exchange of air between the lung and environment) normally decreases during sleep. Even in «normal peoples" breathing patterns may show a few irregularities during sleep. For example, a person might experience an average of seven breathing pauses of up to 10 seconds per night without any associated symptoms or problems. However, if the breathing irregularities are accompanied by reduced oxygen supply to tissue (hypoxia) and repeated loss of sleep, these people are at risk of developing more serious problems.

## HOW TO CURE YOUR SNORING

Clinically proven Ronchostim® nasal delivery system effectively removes the cause of snoring. It is a plain and simple treatment, which relives you and your partner of the inconvenience that snoring causes.
Ronchostim® lubricates and softens the mucous membrane and lightly tightens the musculature in the throat. This means that breathing is not disturbed in any way, and that your mouth will not be as dry in the morning.

Is Ronchostim® nasal delivery system efficient? Yes, Ronchostim® is clinical proven from comprehensive clinical studies carried out of leading scientist and University Hospitals in London and Copenhagen (see below).
Ronchostim® is the best and most "easy to use" product used on the market.
You sleep better and wake up refreshed after a good night's sleep. More than 80% of the persons that use Ronchostim® have reported that they are less tired during the day.

# Clinical studies, Ronchostim®

## INTRODUCTION

Epidemiological studies have shown that snoring is very prevalent in the adult population. Snoring is more common among men and increases with age, until the age of 60-70. Snoring has been found to imply social and family welfare (difficulties in maintaining work, family problems, for example because of separate bed rooms, hypersomnia, sexual dysfunction). Snoring has been found to be a risk factor for cardiovascular and cerebrovascular disorders and complications, including high blood pressure, angina pectoris, myocardial and cerebral infarction.
Surgical treatment (UvuloPalatoPharyngoPlastic (UPPP), Mandibular advancement etc.) are effective in some patients but are associated with operative and postoperative complications and risk for side effects. Nasal CPAP (Continuous Positive Airway Pressure) is very effective in reducing sleep apnea in patients suffering from severe sleep apnea, but most people suffering from simple snoring do not accept this treatment. Non-surgical and non-CPAP interventions, e.g. position training, tongue or dental devices have been found to be able to reduce snoring in some patients but their use has been debated and disputed. Because most of the snorers does only have "simple snoring" any simple treatment of the snoring problem are of major interest.

## SUBJECTS AND METHOD

Study population

The study population was selected from a large-scaled epidemiological study performed in the Copenhagen area involving 3439 men, age 50-75. Of those 49.9% reported every night or nearly every night snoring according to the questionnaire. 550 were selected by the following criteria:

1. Age 50-65
2. Every night snoring according to the questionnaire
3. Abnormal ENT-findings, acute nasal allergies, alcoholism, abuse of sleeping tablets, major cardiovascular, cerebrovascular and psychiatric diseases were exclusion criteria.

Controlled and stable cardiovascular diseases were accepted. Former cerebrovascular disorders were excluded.
All persons were invited by postal invitation. Of the 550 invitations 278 accepted entry into the study and were found to fulfill the inclusion criteria. This population was divided in 224 persons to the acceptance study and 54 persons to the controlled study.
All were invited to the hospital. A standardized questionnaire was given. All participants underwent a general physical examination and a otolaryngological examination. Blood pressure was measured on the left arm after at least 10 minutes at rest in sitting position. Weight and height were determined and body mass index (BMI) was calculated using Quetelets index (weight / height2).

All participants received written and oral information about the study. Written informed consensus was given by all participants. The study was accepted by the local ethical committee.

## STUDY SUMMARY

Earlier small, open human and animal studies have indicated that nasal application of Ronchostim® solution reduce snoring. In order to characterize the effect of Ronchostim® with and without polysorbate 80 (P-80), a long acting tissue-lubricating polyglycols, on snoring and sleep apnoea, two studies were performed:

1) an open acceptance study with inclusion of 218 every night snores.
2) a double blind controlled study with inclusion of 50 every-night snorers and 218 males, self-reported every-night snorers, age 50-65, participated in an open, acceptance study with a daily use of 1.2 mg Ronchostim®. All participants were instructed to use Ronchostim® freely and report daily. After 6 months 67.9% were still using Ronchostim®. A significant improvement in self or bed-partner reported snoring, and a significant improvement in sleep quality, daytime tiredness and sleepiness were observed compared to baseline values (72%).

In the double blind controlled study, 50 every-night male snorers, age 50-65 were included. All were using a nasal application of 1.2 mg Ronchostim® with Polysorbate every night or a control preparation with Ronchostim®, but without Polysorbate.
In the double blind controlled study, a significant improvement was found both in self and bed partner reported snoring and measured by snoring sensors, tiredness, sleepiness and in sleep quality both in the control and in the test period compared to baseline values (72%). No significant differences were found between the two groups (Polysorbate and non Polysorbate), neither in the use of medication, in self reported snoring, in bed-partner reported snoring, in sleep quality or in daytime symptoms: tiredness and sleepiness compared to the control solution.
The study shows, that nasal installation of the Ronchostim® solution relieves snoring and furthermore no serious side effects were observed.
The Ronchostim® drug was supplied from Boehringer Ingelheim, Germany.

*Department of neurology, University State Hospital, Copenhagen*

# Ronchostim® tested by 1.000 users in Sweden

Out of the total community of more than 300.000 consumers, the Buzzador user organization in Sweden, Ronchostim® was tested by 1.000 selected persons with a snoring problem. The results were very positive as 44% continued to buy or definitely would buy Ronchostim® after the test. The users who experience the effect of Ronchostim® were extremely pleased. 66% found Ronchostim® better or much better than other products they had used before this test.

73% of the users would recommend Ronchostim® to friends and family. This group is the most trusted when it comes to try new products and services.

# Not only Sweden – even Germany have made a large user test

In the German user organization called Konsumgöttinnen more than 6.500 people asked for being a test person. 1.000 testers were selected and they used Ronchostim® for one month. The feeed-back was as impressing as it was in Sweden.
75% of tester and their partners realized a better sleep by using Ronchostim®.

A majority of tester would continue buying the product after the test
By the use of social media in Germany more than 200.000 people have learnt about Ronchostim® in only 2 months.


**HOW TO USE RONCHOSTIM®:**

Ronchostim® anti snoring solution is used each evening before bedtime.

Bend the head backwards and pump 4 to 6 times of Ronchostim® in each nostril, until you can feel the solution in your throat.

In order to achieve the best results it is very important that the solution reaches and coats the mucous membrane of the throat.

*Department of neurology, University State Hospital, Copenhagen*

**DO YOU SUFFER FROM TINNITUS ONLY DURING THE DAY?**

Audistim® JOUR


At last, a solution!

**DO YOU SUFFER FROM TINNITUS?**

Audistim® JOUR/NUIT


At last, a solution!

# ///AUDISTIMPHARMA

## the most comprehensive ENT range!

**DO YOU SOMETIMES FEEL DIZZY AND LOSE YOUR BALANCE?**

Audistim® EQUILIBRE


At last, a solution!

**ARE CONTINUOUS THROAT CLEARING AND IRRITATION AFFECTING YOUR QUALITY OF LIFE?**

Mucodistim®


At last, a solution!

**CUSTOMER SERVICE :** Laboratoire ///AUDISTIMPHARMA
BP 30026. 33601 Pessac / France | Tel : +33 5 56 69 13 84
www.audistimpharma.com