

## **Neurotide Co., Ltd.**

### **Title (Name of Technology)**

Method for Selectively Inhibiting Reuptake of Serotonin and Norepinephrine  
Using Yeast Extract

## Executive Summary

Neurotide Co., Ltd is a biotechnology company that aims to discover and develop, through comprehensive methods and techniques, new proprietary platform technologies, which will greatly impact and positively improve the lives of everyday people. The eventual end commercialization of our technologies are on the role of our alliances. We continuously develop our internal strengths and capabilities while reaching out to wide and solid international partnerships and collaborations.

② Industry Sector:  
Pharmaceutical: Nutrition

③ Therapeutic Target:  
Central Nervous System: anxiety and depression

④ Development phase: early stage

⑤ Type of business relationship sought (including licensing availability): technology transfer, or non-exclusive or exclusive licensing agreement

### Company Description:

- CEO: Yun Seok CHOE
- Established: 2000.03
- No. of Employees: 12
- Location: Seoul, Korea

## Key Technology Highlights

### ▫ Novel use of yeast extract as SSRIs

- The inhibiting effects of the present yeast extract on the specific binding of [3H]paroxetine and [3H]nisoxetine in white rat's cerebral cortex membranes
- The inhibiting effects of the present yeast extract on reuptake of [3H]NE and [3H]5-HT in white rat's cerebral cortex synaptosomal membranes - Stable protein: Profit long-term storage (9 cystein residues)
- Effect of the present yeast extract on duration of immobility in FST
- Acute effect of the present yeast extract on duration of immobility in FST
- Effect of the present yeast extract on duration of immobility in TST
- Effect of the present yeast extract on time in open arm in EPM
- Acute effect of the present yeast extract on time in open arm in EPM
- Anti-depression effect of the present yeast extract in HDS; and anti-anxiety effect of the present yeast extract in HAS.

### ▫ Application for Diseases

- Various diseases related to reuptake of serotonin and norepinephrine
- Especially, depression, anxiety, stress, fatigue, obesity and so on.

### ▫ Market Opportunity

- An selective serotonin and norepinephrine reuptake inhibitor
- An anti-anxiety agent to treat anxiety caused from undue reuptake of serotonin and norepinephrine
- An anti-stress agent to treat stress caused from undue reuptake of serotonin and norepinephrine
- An anti-fatigue agent to recover fatigue caused from stress or muscular fatigue caused from exercises
- Anti-obesity agent to treat obesity caused from undue reuptake of serotonin and norepinephrine

### Company History:

2000.03	Company established
2002.03	Approved as the Venture Business Company
2004.01	Food material for depression /anxiety /premenstrual syndrome  "Yeast hydrolysate SCP-20"  Peptide derived from yeast having activities as anti-stress, anti-fatigue and brain neurotrophic factor and relaxing premenstrual syndrome and menstrual pain and preparing process thereof. (Korea Patent 0416210, 0487887 PCT/KR02/00324)
2004.5	Selected as Task for Technical transference from Small and Medium Business Administration
2004.6	Selected as Task for Technical Innovation from Small and Medium Business Administration
2005. 5	Passed KFDA standard and testing clinical demonstration of anti-stress
2006. 5	Method for selectively inhibiting reuptake of serotonin and norepinephrine using yeast extract. (Korea Patent 0438190)
2007.3	Peptide derived from yeast having activities as anti-stress, anti-fatigue and brain neurotrophic factor and relaxing premenstrual syndrome and menstrual pain and preparing process thereof (Japan Patent 3930808)
2008.11	DNF-10 export to Japan
2009.1	Method for selectively inhibiting reuptake of serotonin and norepinephrine using yeast extract.

- Aa natural brain-neurotrophin to treat stress disorders and maintain balance in the human autonomic nervous system
- Premenstrual syndrome and menstrual pain relaxants to reduce premenstrual syndromes (PMS) and menstrual pains similar to symptoms from stress and chronic fatigue
- A functional beverage, functional gum or functional edible film containing a yeast extract or bioactive peptides obtained by an active component having activities as an anti-depression agent, an anti-anxiety agent, an anti-stress agent, an anti-fatigue agent, anti-obesity agent, premenstrual syndrome and menstrual pain relaxants and a sleeping aids to treat neurogenic disorder, especially imbalance in the autonomic nervous system, caused from stress

## Technology Overview

Yeast, generally recognized as safe (GRAS) for the human body, contains 50% or more quality proteins, excess minerals, vit amin B, etc., so it has been widely used in the liquor or bakery industry as a source of protein, nucleic acids, enzymes, liquid s, vitamins, minerals, etc.. Yeast extracts produced by autolytic enzyme or other proteases have been used as a source of m icroorganism fermentation media, seasonings, and health foods.

A yeast extract or yeast-derived bioactive peptide having an activity of selectively inhibiting reuptake of serotonin and norepinephrine , which can be effectively used in preventing or treating various diseases related to reuptake of serotonin and norepinephrine, especially depression, anxiety, stress, fatigue and obesity.

FIG. 1. The inhibiting effects of the present yeast extract on the specific binding of [3H]paroxetine and [3H]nisoxetine in white rat's cerebral cortex membranes

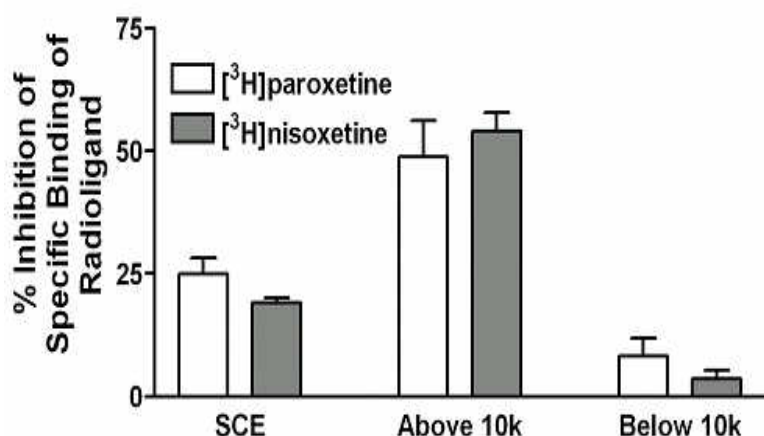


FIG. 2. The inhibiting effects of the present yeast extract on reuptake of [3H]NE and [3H]5-HT in white rat's cerebral cortex synaptosomal membranes - Stable protein: Profit long-term storage (9 cystein residues)

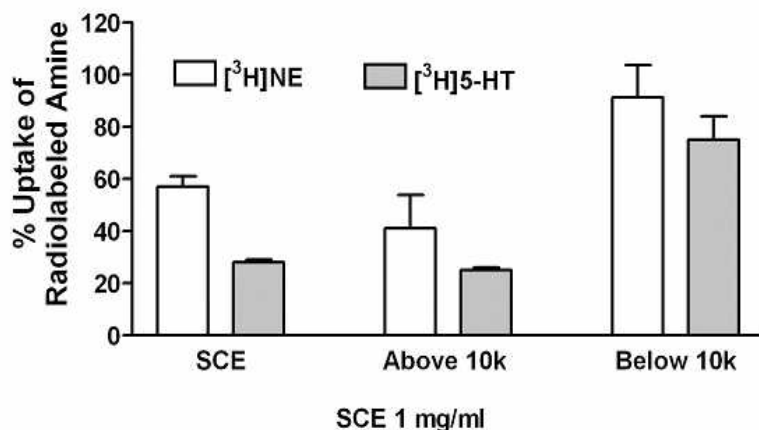
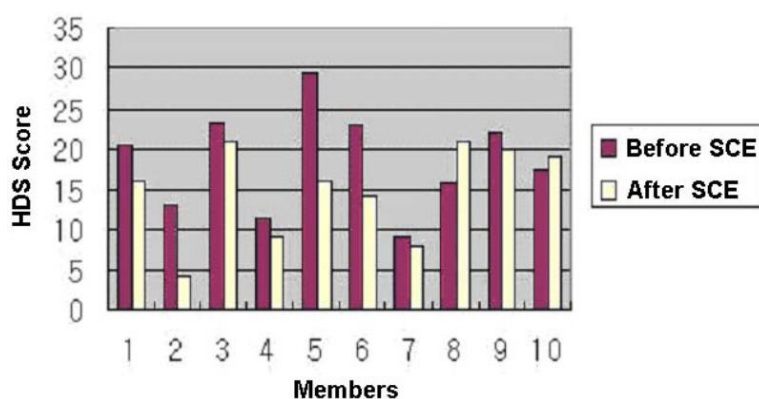


FIG. 3. A graph showing anti-depression effect of the present yeast extract in HDS



## Company Overview

Neurotide Co., Ltd focused on the development and commercialization of innovative, breakthrough therapeutic and diagnostic products for the treatment of medically unaddressed eye-related diseases.

Neurotide Co., Ltd operates in four fields below :

## Patents and Publications

Neurotide Co., Ltd have patents issued or filed for application in many countries with regard to a novel use of Yeast extract.

CC ▼	Pat. No.	Pat. Date	Title
US	<u>7473426</u>	2009.01.06	Method for selectively inhibiting reuptake of serotonin and norepinephrine using yeast extract
US	<u>20040101934</u>	2004.05.27	Peptide derived from yeast having activities as anti-tsress, anti-fatigue and brain neurotrophic factor and relaxing premenstrual syndrome and menstrual pain, and preparing process thereof
US	<b>20060140974</b>	2006.06.29	Method for selectively inhibiting reuptake of serotonin and norepinephrine using yeast extract
WO	<u>WO02/067959</u>	2002.09.06	Peptide derived from yeast having activities as anti-tsress, anti-fatigue and brain neurotrophic factor and relaxing premenstrual syndrome and menstrual pain, and prepairing process thereof