Activities of the European Monitoring Center for Emerging Doping Agents

European Monitoring Center for Emerging Doping Agents

Mario Thevis

Institute of Biochemistry / Center for Preventive Doping Research, German Sport University Cologne, Germany & European Monitoring Center for Emerging Doping Agents (EuMoCEDA), Cologne/Bonn, Germany
Information

- Confiscated material
- Meetings / Conferences
- Patents
- Databases
- Scientific literature
- Internet sources

European Monitoring Center for Emerging Doping Agents

collect information / identify relevant developments / question & summarize
European Monitoring Center for Emerging Doping Agents

- other monitoring centers
- laboratories
- industry
- police / customs control
- scientific community

Contact & Collaboration

Expert groups
- e.g. WADA List Expert Group

report

mandate

review / evaluate / initiate actions
Literature

European Monitoring Center for Emerging Doping Agents

- report
- mandate

Expert groups
- e.g. WADA List Expert Group
- review / evaluate / initiate actions

Contact Collaboration

- other monitoring centers
- laboratories
- industry
- police / customs control
- scientific community
Effective RNA-silencing strategy of IVMSTN/GDF11 gene and its effects on the growth in shrimp.


PMID: 25243567 [PubMed - as supplied by publisher]
Related citations

MicroRNA-Mediated Myostatin Silencing in Caprine Fetal Fibroblasts.


Related citations

Inter-tissue control of the nucleus via a myokine-dependent longevity pathway.


Related citations

Adipose tissue-derived stem cell secreted IGF-1 protects myoblasts from the negative effect of myostatin.


Related citations

Decoerin-induced proliferation of avian myoblasts involves the myostatin/Smad signaling pathway.


PMID: 24570433 [PubMed - indexed for MEDLINE] Related citations
1. **Analytical approaches for the detection of emerging therapeutics and non-approved drugs in human doping controls.**
   - Theus M, Schanzer W.
   - PMID: 24908492 [PubMed - as supplied by publisher]
   - Related citations

2. **Myostatin inhibits proliferation and insulin-stimulated glucose uptake in mouse liver cells.**
   - Watts R, Ghozlan M, Hueghey CC, Johnsen VL, Shearer J, Hittel DS.
   - PMID: 24824055 [PubMed - in process]
   - Related citations

3. **Combimix: a powerful tool for siRNA-induced myostatin inhibition and exercise on skeletal muscle homeostasis and body composition.**
   - Mosler S, Relizani K, Mousiel E, Amtvoll H, Diel P.
   - PMID: 24740523 [PubMed - Free PMC Article]
   - Related citations

4. **Effectiveness of cationic liposome-mediated local delivery of myostatin-targeting small interfering RNA (siRNA)-mediated knockdown of myostatin influences the expression of myogenic regulatory factors in caprine foetal myoblasts.**
   - Kumar R, Singh SP, Kuman P, Mitra A.
   - PMID: 249254255 [PubMed - in process]
   - Related citations

**Results:** 1 to 20 of 66
Center for Preventive Doping Research
Institute of Biochemistry
European Monitoring Center for Emerging Doping Agents

Databases

European Monitoring Center for Emerging Doping Agents

Other monitoring centers
Laboratories
Industry
Police / customs control
Scientific community

Contact
Collaboration

Report
Mandate

Expert groups
e.g. WADA List Expert Group

Review / evaluate / initiate actions
ClinicalTrials.gov
A service of the U.S. National Institutes of Health

Find Studies ▼  About Clinical Studies ▼  Submit Studies ▼  Resources ▼  About This Site ▼

Home ▶ Find Studies ▶ Search Results

28 studies found for: sirna
Modify this search ▶ How to Use Search Results

List ▶ By Topic ▶ On a Map ▶ Search Details

+ Show Display Options

- Include only open studies ▶ Exclude studies with unknown status

<table>
<thead>
<tr>
<th>Rank</th>
<th>Status</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not yet recruiting</td>
<td>EphA2 Gene Targeting Using Neutral Liposomal Small Interfering RNA Delivery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condition: Advanced Cancers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention: Drug: siRNA-EphA2-DOPC</td>
</tr>
<tr>
<td>2</td>
<td>Completed</td>
<td>Study of TD101, a Small Interfering RNA (siRNA) Designed for Treatment of Pachyonychia Congenita</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Condition: Pachyonychia Congenita</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interventions: Drug: TD101; Drug: Normal saline (placebo)</td>
</tr>
<tr>
<td>3</td>
<td>Completed</td>
<td>A Dose Escalation Trial of an Intravitreal Injection of Sirna-027 in Patients With Subfoveal Choroidal Neovascularization (CNV) Secondary to Age-Related Macular Degeneration (AMD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conditions: Age-Related Macular Degeneration, Choroidal Neovascularization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention: Drug: AGN211745</td>
</tr>
<tr>
<td>4</td>
<td>Active, not recruiting</td>
<td>Immunotherapy of Melanoma With Tumor Antigen RNA and Small Inhibitory RNA Transfected Autologous Dendritic Cells</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conditions: Metastatic Melanoma, Absence of CNS Metastases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention: Biological: Proteasome siRNA and tumor antigen RNA-transfected dendritic cells</td>
</tr>
<tr>
<td>5</td>
<td>Terminated</td>
<td>A Study Using Intravitreal Injections of a Small Interfering RNA in Patients With Age-Related Macular</td>
</tr>
</tbody>
</table>
Combined Single / Multiple Dose Escalation Study in Patients With Renal Anemia Due to CKD (Chronic Kidney Disease)

This study is currently recruiting participants.
Verified on July 2011 by Bayer
First Received on April 8, 2011. Last Updated on July 14, 2011  History of Changes

**Purpose**

The drug that is under investigation during this study is BAY66-3934 which is intended to be used as a treatment for patients suffering from renal anemia due to chronic kidney disease (stages 3 and 4).

The purpose of this study is to provide safety and tolerability information on the drug. Other objectives of the study are to investigate the effect of the drug on the body (pharmacodynamics) as well as the absorption, breakdown, metabolism, distribution and excretion (pharmacokinetics) by measuring the concentration in blood and urine.

The study will be conducted in one study center in the United Kingdom and several centers in Germany. 48 patients who meet the inclusion criteria will participate in the study. BAY 66-3934 will be given following a combined single/multiple dose escalation design in four dose steps.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Intervention</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia</td>
<td>Drug: BAY66-3934</td>
<td>Phase I</td>
</tr>
</tbody>
</table>

**Sponsor:**

**Information provided by:**

**ClinicalTrials.gov Identifier:** NCT01332942
Conferences

European Monitoring Center for Emerging Doping Agents

- other monitoring centers
- laboratories
- industry
- police / customs control
- scientific community

Contact
Collaboration

Expert groups
e.g. WADA List Expert Group

report
mandate

review / evaluate / initiate actions
May 28, 2006

High Throughput Quantitative Analysis of a Synthetic Peptide Dimer in Biological Samples by LC/MS/MS

JongSo Hyun; Xun Cheng; Douglas L. Cole; Jing J. Zhang*
Affymax, Inc., Palo Alto, CA

Overview

Purpose: Synthetic peptides and their PEGylated forms are now well recognized as an important drug class. In order to better understand the PK and PD properties of peptide dimers, we have developed a high throughput method to quantitatively determine peptide dimer concentrations in biological samples.

Method: Peptide dimer was extracted from rat plasma and analyzed by LC/MS/MS.

Result: A high throughput quantitative LC/MS method was developed for PK sample analysis. The results agreed with those generated from an ELISA biological method. But the LC/MS method has much lower variability and detection limit.

Introduction

Synthetic peptides are an increasing important drug class and it has been reported that di-terminus peptides can exhibit enhanced binding affinity at protein receptors. In order to better understand the PK and PD of peptides of this class, we developed a high through quantitatively determine the concentrations of both PEGylated and non-PEGylated such peptides in biological samples. The development of a high throughput quantitative method for a model peptide dimer was particularly challenging due to its relatively high molecular weight.

Method

Materials:
- Synthetic peptide dimer (Figure 1).
- Blank Rat Plasma
- Rat PK plasma samples
- Figure 1. Cartoon scheme of a typical peptide dimer

Conclusions

Results from the new LC/MS/MS method and the reference ELISA method are essentially identical, but the LC/MS method has lower variability and higher sensitivity without antibody limitation.

Acknowledgements

We thank H. Jakub, M. Chen and P. Schatz for providing ELISA data.
Police find unlicensed drugs after trawling bins of Tour de France cyclists

One drug that cyclists are thought to be using increased exercise performance in mice by 44%

Paul Benkimoun PARIS
France’s antidoping agency has uncovered “a surprising therapeutic arsenal,” including two drugs that are not yet licensed, after scrutinising bins in the wake of the 2009 Tour de France.

Michel Rieu, the scientific adviser of the French Agency Against Doping (Agence Française de Lutte Contre le Dopage), said at a press conference on 7 October, “These are incongruous products in a milieu where people are supposed to be in good health.”

Professor Rieu said that this “surprising therapeutic arsenal” had been reported to the World Anti-Doping Agency in July.

The agency said it suspected that some cyclists were using blood transfusions and two unlicensed substances.

Pierre Bordry, head of the agency, told the French daily Le Monde on 28 July that he was “convinced that two new products have been used during the [2009] tour, two drugs that are not yet on the market.”

The first is a “third generation” erythropoietin called Hématide, which helps maintain stable haemoglobin concentrations—fluctuating haemoglobin being a sign that an athlete has taken banned substances. Hématide is still in phase III clinical trials for the treatment of anaemia and is not expected to reach the market before 2011.

The second compound, known as Aicar, increases performance of endurance exercise and decreases adiposity.

Exercise performance in sedentary mice treated with Aicar is 44% better than that in control mice, as if they had undergone training (Cell 2008;134:405-15).

A spokeswoman for Affymax, which makes Hématide, said it was unaware of the drug being used to enhance athletic performance and that it was working with the World Anti-Doping Agency to ensure that the drug is used only for its intended purpose.

She said, “We share its [the agency’s] founding principle that doping endangers the health of athletes and undermines the integrity of sports. We place a top priority on patient safety.”

The French antidoping agency wanted to run another round of tests on some samples collected from cyclists during the 2009 Tour de France, but the samples “belong” to the International Cycling Union, which did not grant it authorisation. Mr Bordry expressed his frustration with the International Cycling Union. “We can have questions, but we can’t go beyond that,” he said.

Cite this as: BMJ 2009;339:b4201
May 2011, Test methods

Research Article

Received: 24 May 2011 Revised: 27 May 2011 Accepted: 27 May 2011 Published online in Wiley Online Library

DOI: 10.1002/rcm.5109

Synthesis, characterisation, and mass spectrometric detection of a pegylated EPO-mimetic peptide for sports drug testing purposes

Ines Möller, Andreas Thomas, Hans Geyer, Wilhelm Schänzer and Mario Thevis*

Institute of Biochemistry – Center for Preventive Doping Research, German Sport University Cologne, Am Sportpark Münsterdorf 6, 50933 Cologne, Germany

Forensic Science International 213 (2011) 15–19

Contents lists available at ScienceDirect

Forensic Science International

journal homepage: www.elsevier.com/locate/forsciint

Methods for detection and confirmation of Hematide™/peginesatide in anti-doping samples

Nicolas Leuenerberger a, Jérémy Saugy a, Richard B. Mortensen b, Peter J. Schatz b, Sylvain Giraud a, e, Martial Saugy a

a Swiss Laboratory for Doping Analyses, University Center of Legal Medicine, Geneva and Lausanne, Centre Hospitalier Universitaire Vaudois and University of Lausanne, Ch. des Croixettes 22, CH-1011 Epalinges, Switzerland
b Biology Department, Affymax Inc., 4001 Miranda Avenue, Palo Alto, CA 94304, USA
March 2012, FDA Approval

\[(AcG)GLYACHMGPIT(1-nal)VCQPLR(MeG)K\]

\[\text{PEG} \quad \text{(2 x 20 kDa)}\]
March 2013, FDA Recall

Omontys (peginesatide) Injection by Affymax and Takeda: Recall of All Lots - Serious Hypersensitivity Reactions

[Posted 02/23/2013]

AUDIENCE: Patients, Healthcare Professionals, Nephrology, Hematology
Confiscations

European Monitoring Center for Emerging Doping Agents

Contact
Collaboration

other monitoring centers
laboratories
industry
police / customs control
scientific community

report
mandate

Expert groups
e.g. WADA List Expert Group

review / evaluate / initiate actions
modified furazabol conjugate

(home-made) testosterone gel dispenser

85.0656 $[\text{C}_5\text{H}_9\text{O}]^+$

257.1660 $[\text{C}_{16}\text{H}_{21}\text{N}_2\text{O}]^+$

316.2155 $[\text{C}_{19}\text{H}_{28}\text{N}_2\text{O}_2]^+$

400.2740 $[\text{C}_{24}\text{H}_{36}\text{N}_2\text{O}_3]^+$

$[\text{C}_5\text{H}_9\text{O}]^+$

$[\text{C}_{16}\text{H}_{21}\text{N}_2\text{O}]^+$

$[\text{C}_{19}\text{H}_{28}\text{N}_2\text{O}_2]^+$

$[\text{C}_{24}\text{H}_{36}\text{N}_2\text{O}_3]^+$
Internet sources

European Monitoring Center for Emerging Doping Agents

- Other monitoring centers
- Laboratories
- Industry
- Police / customs control
- Scientific community

Contact

Collaboration

Report

Mandate

Expert groups

E.g. WADA List Expert Group

Review / evaluate / initiate actions
Welcome!

We are the leading provider of SARMS S-4 in the United States. At www.XXXXXXXXX.com we work very closely with our customers to provide the very best products available on the market.

Our business is built on a philosophy of strong customer focus, regular communication with a high degree of quality and value.

NOT FOR HUMAN CONSUMPTION
SARMS S-4

We are the leading provider of SARMS S-4 in the United States.

Our business is built on a philosophy of strong customer focus, regular communication with a high degree of quality and value.

NOT FOR HUMAN CONSUMPTION
JAAA awaits result of Wilkins drug hearing

BY DANIA BOGLE Observer staff reporter
Wednesday, July 14, 2010

THE Jamaica Amateur Athletic Association (JAAA) is expecting a result soon from the disciplinary hearings being held into the positive drugs test result returned by quarter-miler Bobby-Gaye Wilkins, Dr Warren Blake told the Observer.

Wilkins tested positive for the Selective Androgen Receptor Modulator (SARM) Andarine, which is listed by the World Anti-Doping Agency (WADA) as an anabolic agent, at the 13th IAAF World Indoor Championships (WIC) in Doha, Qatar in March.
Center for Preventive Doping Research
Institute of Biochemistry
European Monitoring Center for Emerging Doping Agents

Patents

European Monitoring Center for Emerging Doping Agents

Contact

Collaboration

other monitoring centers
laboratories
industry
police / customs control
scientific community

report
mandate

Expert groups
e.g. WADA List Expert Group

review / evaluate / initiate actions
METHODS FOR ENHANCING EXERCISE PERFORMANCE

Bibliographic data

Publication number: WO2008083330 (A2)
Publication date: 2008-02-10
Inventor(s): EVANS RONALD [US], NARKAR VIHANG A [US], WANG YONG-XU [US], DOWNES MICHAEL [US], YU RUTH T [US]
Applicant(s): SALK INST FOR BIOLOGICAL STUDI [US], EVANS RONALD [US], NARKAR VIHANG A [US], WANG YONG-XU [US], DOWNES MICHAEL [US], YU RUTH T [US]

Classification:
- International: C12Q1/68; A61K31/47; C12Q1/68; A61K31/47
- European: A61K31/47; C12Q1/68

Application number: WO2007US89124 20071228
Priority number(s): US20080882774P 20081229

Abstract of WO 2008083330 (A2)

Disclosed herein are methods for enhancing one or more effects of exercise in a subject by administering a PPARδ agonist (e.g., GW1516) to the subject in combination with an exercise program. Also disclosed are gene expression profiles unique to the combination of agonist-induced PPARδ activation and exercise. Such profiles are useful, at least, in methods for identifying the use of performance-enhancing drugs in exercised subjects (such as, professional or athletes). Direct interactions between PPARδ and exercised-induced kinases (e.g., AMPK or its subunits, AMPK al and/or AMPK a2) are also disclosed. Such protein-protein interactions provide new targets for identification of useful compounds.
GW501516 positives confirmed, three out of 4 riders are from the same BCR Pizza Hut team

By Shane Stokes @ 3:10 PM Monday, April 15, 2013

UCI confirms Vargas Barrantes, Mudarra Segura, Morales Castillo, Villalobos Azofeifa, and Miguel Ubeto provisionally suspended

Sergej Lisin arguably first athlete tested positive with GW1516 (2012)
(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 April 2007 (12.04.2007)

(10) International Publication Number
WO 2007/039731 A1

(51) International Patent Classification:
A61K 33/00 (2006.01)  A61P 39/00 (2006.01)

(21) International Application Number:
PCT/GB2006/003678

(22) International Filing Date:  3 October 2006 (03.10.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0520176.9  4 October 2005 (04.10.2005)  GB


(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
Use of xenon is described. Xenon is used as an organ and/or tissue and/or cell protectant in the manufacture of a pharmaceutical for the protection from injury of organs and/or tissue and/or cells that express HIF.
Science and Technology

Athletic enhancement

Breathe it in

An obscure gas improves athletes’ performance
МЕТОДИКА В ДЕЙСТВИИ.

Исследование биоэлектрической активности коры головного мозга.

Проведение процедуры на гребной базе УТС Кальдос-де-Аргос, Португалия.
The amended 2014 Prohibited List (Section S2.), which now includes Hypoxia-Inducible Factor (HIF) activators Xenon and Argon, will be in force as of September 1.
**European Monitoring Center for Emerging Doping Agents**

- Other monitoring centers
- Laboratories
- Industry
- Police / customs control
- Scientific community

**Contact and Collaboration**

**Report**

**Mandate**

**Expert groups**
- E.g. WADA List Expert Group

**Review / Evaluate / Initiate Actions**
Confiscated Enobosarm

- Seized 2012 by German Customs Control
- 1 kg of pure Enobosarm (MK-2866)
Unknown black market sample

Monoisotopic mass of the intact protein: 17931.84 Da
pET-32 Ek/LIC Vektor (Novagen):

- Hypothetical peptide including protein tags and MCS:
  \[ \rightarrow \quad 183 \text{ AS}, \quad 19.5 \text{ kDa} \]

**Black market product = „empty“ vector**
European Monitoring Center for Emerging Doping Agents

Expert groups
  e.g. WADA List Expert Group

report

mandate

other monitoring centers

laboratories

industry

police / customs control

scientific community

Contact

Collaboration

review / evaluate / initiate actions
World Anti-Doping Agency

Council of Europe (Advisory Group on Science)

World Association of Anti Doping Scientists

DFG Senate Commission on Food Safety

Network of (European) NADOs
Industry partners
Acknowledgments

- German Federal Ministry of the Interior
- World Anti-Doping Agency