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**Manuscript NO:** 52909

**Manuscript Type:** ORIGINAL ARTICLE

### *Basic Study*

Cytotoxicity of nonylphenol on spermatogonial stem cells via phosphatidylinositol-3-kinase/protein kinase B/mammalian target of rapamycin pathway

Lei JH *et al.* Cytotoxicity of NP on SSCs

Jun-Hao Lei, Wen Yan, Chun-Hua Luo, Yu-Ming Guo, Yang-Yang Zhang, Xing-Huan Wang, Xin-Jun Su

### **Abstract**

#### BACKGROUND

With continuous advancement of industrial society, environmental pollution has become more and more serious, there has been an increase in infertility caused by environmental factors. Nonylphenol (NP) is a stable degradation product widely used in daily life and production, and has been proven to affect

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Cytotoxicity of nonylphenol on spermatogonial stem cells via



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## Nonylphenol induced apoptosis and autophagy involving the ...

<https://www.sciencedirect.com/science/article/pii/S0300483X16302657>

Dec 12, 2016 · **Prepubertal NP exposure** can trigger **oxidative stress**, disturb **PI3K/AKT/mTOR pathway**, induce apoptosis and autophagy, cause developing reproductive lesion in **vivo** and in vitro. Meanwhile, it disrupts endocrine system, reduces semen quality.

**Cited by:** 28

**Author:** Wenting Huang, Chao Quan, Peng Duan,...

**Publish Year:** 2016

## Time now to TORC the TORC? New developments in mTOR ...

<https://onlinelibrary.wiley.com/doi/abs/10.1111/bjh.12945>

This review highlights the important and well-described aspects of the critical phosphatidylinositol-4,5-bisphosphate 3-kinase (**PI3K/AKT/mTOR pathway**) and discusses the mechanisms of action of rapamycin, its clinical efficacy in lymphoid malignancies, and the mechanisms of ...

**Cited by:** 23

**Author:** Toby A. Eyre, Graham P. Collins, Anthony...

**Publish Year:** 2014

## Differential Cytotoxicity of Different Sizes of Graphene ...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6410280>

Jan 22, 2019 · AgNPs reduced the viability of **spermatogonial stem cells** (SSCs) in a dose and size-dependent manner, and also decreased the proliferation of SSCs by disrupting the glial **cell**-derived neurotrophic factor/Fyn kinase signaling **pathways**. Furthermore, AgNPs reduced the expression of tight junction genes in TM4 **cells**, and of steroidogenesis-related ...

**Cited by:** 6

**Author:** Sangiliyandi Gurunathan, Min-Hee Kang, ...



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## The Mammalian Target of Rapamycin Signaling Pathway ...

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The immunosuppressive drug **rapamycin** played a key role in the functional characterization of **mammalian target of rapamycin** (mTOR), an unusual protein **kinase** that ...

## The mammalian target of the rapamycin (mTOR) kinase ...

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The **mammalian target of rapamycin** (mTOR) is a **kinase** responsible for mitogen-induced **cell** proliferation/survival signaling. Its activation in response to mitogens leads to a **cell** ...

## Mammalian target of rapamycin (mTOR): a central regulator ...

[https://www.researchgate.net/publication/312448111\\_Mammalian\\_target\\_of\\_rapamycin\\_mTOR...](https://www.researchgate.net/publication/312448111_Mammalian_target_of_rapamycin_mTOR...)

**Mammalian target of rapamycin (mTOR)** is a central regulator of cellular metabolic phenotype and is involved in virtually all aspects of cellular function.

## Nonylphenol induced apoptosis and autophagy involving the ...

<https://www.sciencedirect.com/science/article/pii/S0300483X16302657>

This research explores the detrimental effect **of nonylphenol** (NP) to prepubertal Sprague-Dawley male rats in vivo and in vitro. Herein, forty-two 3-week-old rats were randomly divided into six groups, which were treated with NP (0, NAC, 25, 50, 100, 100 + NAC mg/kg/2d for 30 consecutive days) by intraperitoneal injection.

**Cited by:** 29

**Author:** Wenting Huang, Chao Quan, Peng Dua...

**Publish Year:** 2016

## Stem Cell Factor/c-kit Up-regulates Cyclin D3 and Promotes ...

[https://www.researchgate.net/publication/12469947\\_Stem\\_Cell\\_Factorc-kit\\_Up-regulates...](https://www.researchgate.net/publication/12469947_Stem_Cell_Factorc-kit_Up-regulates...)

**Stem Cell** Factor/c-kit Up-regulates Cyclin D3 and Promotes **Cell** Cycle Progression **via** the Phosphoinositide 3-**Kinase**/p70 S6 **Kinase Pathway** in Spermatogonia





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### [Nonylphenol induced apoptosis and autophagy involving the ...](#)

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This research explores the detrimental effect of **nonylphenol** (NP) to prepubertal Sprague-Dawley male rats in vivo and in vitro. Herein, forty-two 3-week-old rats were randomly divided into six groups, which were treated with NP (0, NAC, 25, 50, 100, 100 + NAC mg/kg/2d for 30 consecutive days) by intraperitoneal injection.

**Cited by:** 29**Author:** Wenting Huang, Chao Quan, Peng Duan,...**Publish Year:** 2016

### [The Blood-Testis Barrier and Its ... - PubMed Central \(PMC\)](#)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3250082>

Studies in the past decade have shown that an activation of phosphatidylinositol 3-**kinase** (PI3K), a lipid **kinase** that activates PKB in the PI3K/PKB/mTOR (mechanistic **target of rapamycin**, a Ser/Thr **kinase**) signaling **pathway** is crucial to regulate **cell** growth, proliferation, differentiation, apoptosis, and intracellular protein trafficking in ...

**Cited by:** 525**Author:** C. Yan Cheng, Dolores D. Mruk**Publish Year:** 2012

### [Journal of Cellular Biochemistry: Vol 120, No 5](#)

<https://onlinelibrary.wiley.com/toc/10974644/2019/120/5>

The Lbc gene promotes differentiation of chicken embryo **stem cell** into **spermatogonial stem cells** via the regulation of ... in NSCLC by preventing the phosphatidylinositol 3 **kinase/protein kinase B** signaling **pathway** against STXBP5 expression. ... pair regulate proliferation and migration of adenocarcinoma **cells** via the **mammalian target** of ...

### [Stem Cell Factor/c-kit Up-regulates Cyclin D3 and Promotes ...](#)

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**Stem Cell** Factor/c-kit Up-regulates Cyclin D3 and Promotes **Cell** Cycle Progression via the Phosphoinositide 3-**Kinase**/p70 S6 **Kinase Pathway** in Spermatogonia

### [Role of c-KIT expression level and phosphatidylinositol 3 ...](#)

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The phosphatidylinositol 3-**kinase** (PI3K)/Akt (protein **kinase B**, PKB)/**mammalian Target Of Rapamycin** (mTOR) signaling **pathway** plays a critical role ...