附录 2：国内良知学者 13 项研究揭示草甘膦损伤蛋白质和脂质、致细胞凋亡和坏死、对肝细胞具有明显的损伤作用、致突变、致生殖毒性，具有对人类后代致出生缺陷强大能力！

Attachment 2: Thirteen studies by Chinese conscience scholars reveal that glyphosate damages protein and lipids, causes cell apoptosis and necrosis, shows obvious damage to liver cells, is mutagenic, causes reproductive toxicity, and has strong ability to cause birth defects!

要点概述

Summary of Main Points

1）邬惠琼（1996）：草甘膦与试验鼠"肝微粒体蛋白含量明显减少…蛋白含量减少可能与肝细胞受损致使合成蛋白能力下降有关；

1) Wu Hui-qiong (1999): **Glyphosate and test rat "Liver microsomal protein content decreased significantly … protein content reduction might be associated with protein synthesis ability reduction caused by impaired liver cell damage."**

2）耿德贵等（2000）：对黄鳝具有明显的遗传学损伤作用"

2) Geng De-gui et al. (2000): Causes obvious genetic damage to yellow eel"

3）南旭阳（2001）：不同浓度草甘膦药物"对蟾蜍的红细胞微核率和核异常率均有一定程度的影响

3) Nan Xuyang (2001) Different concentration of glyphosate "causes certain degree of effect on RBC micronucleus rate and the rate of nuclear anomalies of toads"

4）南旭阳（2002）：对鲫鱼的血红蛋白、红细胞和白细胞影响较大

4) Nan Xuyang (2002): "causes rather large effect on Crucian carp hemoglobin, red blood cells and white blood cells, with rather obvious time duration effect."

5）南旭阳等（2003）：对泥鳅具有一定的生理毒性"

5) Nan Xuyang et al. (2003): **"causes certain degree of biological toxicity to loaches".**

6）康菊芳等（2008）：对小鼠具有生殖毒性并具有一定的致突变作用

6) Kang Jufang et al. (2008): **"causes reproduction toxicity to mice with a certain mutagenic effect".**

7）王非（2008）：能引起人肝细胞存活率下降,细胞膜通透性增加,抑制细胞离子转运,诱发 DNA 损伤,线粒体膜电位降低,Cyt C、AIF 等凋亡因子泄漏,使细胞产生凋亡和坏死,对肝细胞具有明显的损伤作用。

7) Wang Fei (2008): **"Can lead to liver cell survival rate decrease, cell membrane permeability increase, inhibit cell ion transport, induce DNA damage, mitochondrial membrane potential decreased, leakage of Cyt C, AIF apoptosis factors, causes cell apoptosis and necrosis, obvious damage to liver cells".**

8）黄婷（2010）：可引起小鼠精子数目减少、精子畸形率增加,以及附睾和睾丸重量及其系数下降,提示农达对雄性小鼠具有明显的生殖毒性作用。

8) Huang Ting (2010): Could cause mice sperm number reduce, sperm deformity rate increase, epididymis and testis weight and coefficient decline, suggesting Roundup causes obvious reproductive toxicity in male mice".

9）李娇等（2010）：草甘膦对海胆胚胎各发育期具有一定的急性毒性

9) Li Qiao et al. (2010): "Glyphosate causes certain acute toxicity to sea urchin embryos during different phases of development".

10）赵伟等（2011）：草甘膦能降低小鼠的总抗氧化能力,损伤蛋白质和脂质,造成机体的氧化损伤,导致各种疾病的发生。

10) Zhao Wei et al. (2011): **"Glyphosate can reduce total antioxidant capacity, damage protein and lipid, cause oxidative damage of the body, cause development of various diseases".**

11）俞慧等（2012）：草甘膦对小鼠具有生殖毒性并具有一定的致突变作用

11) Yu Hui et al. (2012): **"Glyphosate causes reproductive toxicity to mice and has certain mutagenic effect".**

12）曾明等（2014）：研究表明,60-180 mg•L-1 浓度草甘膦对 GC-1 细胞有明显的损伤作用,其机制可能是草甘膦诱导氧化应激,导致细胞通透性增加和 DNA 损伤。

12) Zeng Ming et al. (2014): "The study indicates, 60-180 mg·L-1 concentration glyphosate causes obvious damage to GC-1 cells, its mechanism might be oxidative stress induced by gyphosate, leading to cell permeability increase and DNA damage."

13）赵文红等（2013）：草甘膦对小鼠 sertoli 细胞有一定的毒性,能诱导细胞凋亡及抑制细胞增殖,且随草甘膦剂量的增加,有害作用有增加的趋势;同时能抑制 ABP 和波形蛋白 mRNA 的表达。

13) Zhao Wenhong et al. (2013): "Conclusion: Glyphosate causes certain toxicity to mice sertoli cells, can induce cell apoptosis and inhibit cell proliferation, and the harm increases with glyphosate dosage increase; At the same time can inhibit the expression of ABP and wave shape protein mRNA."

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