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Le paradoxe du poison

Article paru dans "Nature" (la plus importante revue scientifique américaine) du 20 octobre 2005 et repris par AgBioView, forum internet sur les OGM.

Petit résumé en français...

Titre du livre : **"Le paradoxe du poison : les produits chimiques comme amis et comme ennemis", par John Timbrell (Oxford University Press, 2005)**
Le livre (et l'article de critique) met en perspective le progrès scientifique, ses effets collatéraux et la gestion de tout cela par les sociétés humaines. Spécifiquement pour les produits chimiques, les poisons, les médicaments, et leurs effets indésirables.
Il est important que le public comprenne que l'analyse de risque sur une base scientifique (bénéfices / risques) est une meilleure attitude que la "préoccupation" usuelle.
"Le livre "le paradoxe du poison" fournit au lecteur les éléments nécessaires pour élaborer une saine perception du risque et de ses implications en toxicologie."

Quelques citations traduites de l'article pour en percevoir le ton :

"Il est remarquable qu'on se souvient que les périodes historiques caractérisées par une intense activité intellectuelle sont aussi des périodes de violence et de destruction. Comme Harry Lime (joué par Orson Welles) l'a remarqué de façon célèbre dans le film "le troisième homme" : En Italie, pendant 30 ans, le règne des Borgias a été marqué par la guerre, la terreur, le meurtre et le sang versé, mais a aussi produit MichelAnge, Léonard de Vinci et la Renaissance. En Suisse, ils ont eu la fraternité, pendant 500 ans ils ont eu la démocratie et la paix, mais qu'ont-ils produit ? Le coucou suisse."
"Même si nous pouvons ne pas être entièrement en accord avec cette citation, il est clair que le développement culturel et scientifique et le progrès économique ont, de façon presqu'inévitable des effets collatéraux"

" Une meilleure éducation et information a aussi accru la prise de conscience généralisée des risques des produits chimiques et des médicaments, faisant émerger une préoccupation dans le public, les médias et les gouvernements. Dans les 30 dernières années, il y a eu une pression pour réduire la contamination environnementale, et les exigences de sécurité sont devenus beaucoup plus strictes sur l'alimentation et les médicaments. Toutefois, la perception par le public du risque chimique a augmenté de façon disproportionnée"
"L'aspirine ne pourrait pas être pas être homologuée aujourd'hui du fait de ses nombreux effets secondaires, et malgré sa valeur thérapeutique."

Une citation du livre pour terminer :
"Quand la perception du risque par le public est plus grande que le risque réel, les politiciens ressentent le besoin de prendre des mesures (qui, en réalité, ne sont pas nécessaires), avec pour seul résultat que des sommes folles peuvent être dépensées sans bénéfice réel"

Mixed Reactions

- Pierluigi Nicotera, Nature 437, 1093; October 20, 2005. www.nature.com/nature <http://www.nature.com/nature>
"BOOK REVIEWED -The Poison Paradox: Chemicals as Friends and Foes by John Timbrell; Oxford University Press: 2005. 360 pp. £19.99, $29.95"

It is remarkable that historical periods characterized by a surge of intellectual growth have also been remembered for violence and mischief. As Harry Lime (played by Orson Welles) famously remarked in the film The Third Man: "In Italy for 30 years under the Borgias they had warfare, terror, murder and bloodshed, but they produced Michelangelo, Leonardo da Vinci and the Renaissance. In Switzerland they had brotherly love -- they had 500 years of democracy and peace, and what did that produce? The cuckoo clock."

Although we may not entirely sympathize with this quote, it is clear that cultural development and scientific and economic progress almost inevitably have side effects. During the Renaissance in France and Italy, the first systematic studies of anatomy and physiology, and the empirical experimentation of the dose-effect relationship (often in humans who did not volunteer), led to a better understanding, and more accurate use, of poisons.

Unwanted side effects of scientific and technological progress are evident throughout human history. The industrial age has produced one of the most obvious: the contamination of the

environment by potentially harmful, synthetic products. More recently, with the mass production of foods, widespread dietary contamination has become a problem. Finally, while a better understanding of disease processes has fostered the development of effective and powerful drugs, these can also cause unexpected, adverse reactions.

Better education and information have also increased the general awareness of the risks posed by chemicals and drugs, raising concern among the public, media and governments. In the past three decades, there has been pressure to reduce environmental contamination, and the safety requirements for foods and drugs have become more stringent. Nevertheless, the public perception of risk from chemicals has since grown disproportionately. It may be possible in many cases to provide safe products without adverse effects, but it is not universally achievable. Hence, the margins for developing safe yet effective medicines have been consistently reduced by the increasing pressure to develop drugs that are devoid of side effects. For example, aspirin would probably not pass the regulatory process today because of its many side effects, despite its therapeutic value. Chemicals are intrinsically hazardous and all pose some degree of risk, which is perhaps not entirely appreciated by the public. Virtually all human endeavours are potentially harmful, and all agents are potentially toxic. However, the dose or level of exposure and an individual's susceptibility will play a major role in determining the risk posed by a compound.

In The Poison Paradox, John Timbrell addresses the problem of the risks posed by chemicals, and considers how, when and why they can be toxic. The book is pervaded by the reminder that it is the dose that makes a chemical toxic. Using easily understandable examples, Timbrell guides the reader through the basic principles of toxicology (such as the interaction between chemicals and biological organisms). Often using an anecdotal style, he clearly explains the dangers and risks linked to natural and synthetic products, including medicines, food and environmental contaminants. Finally, he summarizes the criteria required to assess chemical hazard and risk.

This is not a book for the specialist, but rather is aimed at a general reader who wants to understand the principles that have guided toxicology and the difference between hazards, risks and their assessment. The conclusions are well balanced and illustrate the difficulty of predicting and determining the risk of exposure to agents that we perceive as toxic. One revealing example is given in the chapter on endocrine disruptors -- chemicals that cause adverse health effects as a result of changes in hormone function, such as dioxins and oestrogens. Timbrell describes the experimental evidence for their toxicity, the problem with different species' susceptibility to these chemicals, and the lack of convincing evidence for their toxicity in man. He concludes that further evidence is needed to assess their potential adverse health effects in humans.

The chapters on risk assessment and the perception of risk by the public further highlight the need for a better understanding of risk, and show how some risk is unavoidable. Through the analysis of known and yet unresolved problems linked to chemical toxicity, the book also suggests that we need more and diverse research in toxicology. Science, rather than precaution or concern, should drive the assessment of risk and decisions on public health, as Timbrell states: "When the public perception of risk is greater than it really is, politicians need to take steps (which are really unnecessary) to reduce the risk, with the result that huge sums of money may be spent for no real benefit."

The Poison Paradox provides the reader with the information to form an educated perception of risk and its implications in toxicology.