A Study is Rotten in the State of Denmark, and Here's Why

By Josh Bloom — April 22, 2016

We need another BPA study like we need root canal. For many years, hundreds (thousands?) of them have been published just about everywhere except on bus shelters, desperately hoping to find something wrong with the chemical, which is used to make a variety of plastic products, such as can liners. The studies are mostly terrible.

But that hasn't stopped a Danish group from publishing a laughably-flawed paper on the chemical's effect on how fast rats swim, and similarly critical information. The only thing "special" about this one, which was published in Andrology, is that it provides a nearly perfect example of the kinds of deficiencies that you can get away with, and still get something published. Some of this is painfully obvious to the point of being funny. Shall we look?

The paper entitled, "Low-dose effect of developmental bisphenol A exposure on sperm count and behaviour in rats" is obviously a fishing expedition: (1) Feed rats different doses of the chemical; (2) Accumulate loads of data; (3) Look for anything that is statistically significant, whether it makes sense or not; (4) Write the paper and pray that no one pays careful enough attention to see that it's nonsense.

Well, it is nonsense, and it's not difficult to see why. For starters, here are the dozen or so parameters the were measured in rats:

Onset of puberty, impact on the estrus cycle (as determined by vaginal smears), weights of 12 different organs (male and female) at ages 3-4 months, 8 months, and 14 months, histopathological examination of testes and prostate, sperm count, behavior in two different mazes, motor activity, preference for sweetness, and body weight of pups.

That's a lot of stuff to test. The BPA must have done a whole lot right? Well, not really. There were no effects in:

1. Body weights of male pups
2. Lumen formation or seminiferous tubule diameters in testes, proliferation index of prostate
epithelium (no — I have no idea what any of this means)

3. Ventral prostate weight
4. Weight of testes, epididymides, bulbourethral glands, LABC, liver, retroperitoneal fat pad
5. Histological changes in testes and measurement of tubule diameter
6. Weights of testis, ventral prostate, epididymides, bulbourethral glands, LABC, liver or body weight in 8-month-old males
7. The weights of ovaries, liver, pituitary gland or retroperitoneal fat pad in the offspring of 14 months old females
8. The time for sexual maturation of male offspring or the body weight at puberty onset
9. The age of onset of puberty of pups
10. Change in estrus
11. Behaviour in a maze test
12. Swimming capability (with some exceptions)

That's sure a lot of work to find out nothing. Did they get any positive results at all? This is debatable, and depends on your imagination. For example, here is something that is presented as a positive finding — the effect of different doses of BPA on the sperm count in male rats:

![](image)

Is this really a positive finding? Those numbers look awfully similar, and they should; only one of the four doses attains statistical significance. That's the best they have? Maybe. Or not. This next
one might be even worse. Does BPA make rats swim faster? Slower? Neither? I vote for "neither."

Once again, the differences between swimming speed at different doses is small, and looks random. So, it is unlikely that you will see the blur of a BPA-fed rat zipping up the Hudson River as if it had twin 200 HP Evinrude engines strapped to its back.

Saving the best for last, it would seem as though the authors believe that BPA makes females drink less sweetened water, which is an indication of ........ masculinity?? Are they kidding?
Once again, there are small differences between the controls and BPA-treated rats, and a less-than-convincing pattern or trend, so I wouldn't be investing in companies that sell rat gift sets consisting of a jock strap and push-up bra quite yet.

So, there's your study. Six authors, who knows how much funding from the Danish EPA, considerable lab time, and zippo contribution to the world. Useless.

Hold on. I take that back. This could actually help with a rather hot-button issue that we are now facing in the U.S., especially in North Carolina:
Finally, there's this: "These results suggest that the new EFSA temporary tolerable daily intake of 4 micrograms/kg bw/day is not sufficiently protective with regard to endocrine disrupting effects of bisphenol A in humans."

So, if I get this straight, these chuckleheads spent a whole lot of time and money trying (and failing) to prove that BPA is going to harm us, especially at low doses, and are therefore asking the Danish EPA to take some action. Sorry to inject some logic into this, but shouldn't you guys be asking the Danish EPA to raise the amount of BPA that is allowed in the food, rather than lower it? Maybe that's a silly question.

Links