Reviewer's report

Title: Bovine Explant Model Of Degeneration Of The Intervertebral Disc

Version: 1 Date: 30 October 2007

Reviewer: william hutton

Reviewer's report:

General This paper is based on a sound idea. The creation of a space inside the disc is a problem that should be solved. This paper however does not quite solve the problem; it is not a well done, well written experiment. I got mixed up reading the paper. Are you trying to create a space or are you trying to simulate degeneration. If it is the latter then neither trypsin or papain produce "degeneration:. They do produce something that looks a bit like degeneration. If you are trying to create a space (good idea) then you have not really done that.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Background: Change the first sentence to read "There is currently a great deal of interest in developing new therapies to address degeneration of the intervertebral disc, due to the association of disc degeneration with low back pain." Refs 1 and 2. For reference 1 you need a good clear space (not what you produced), and for reference 2 a space is created for the injection of cells. It does not have to be a big space but it must be contained and relatively healthy.

As one moves down the Introduction it gets confusing. Are you trying to create a space or simulate degeneration? In the projects that I have been involved with, to create a space suitable for an implant (solid or injectable) one bores a hole in the anulus and then one painstakingly removes nuclear material. The more you remove (especially from the hard to reach corners) the better. Papain or the like may be a help but will not solve the problem.

Material and Methods: Some of your sentences are not well written You try and say too much in the one sentence. This is all the way through the text. For example third sentence of Samples. Break the sentence at "sterile conditions". Then start a new sentence "They were cleaned of soft tissues....."

Enzyme Digestion: Could we have some numbers here. How many in each group? Give detail of the numbers.

Last para of Enzyme Digestion. This needs to be rewritten. "The disc dimensions (circumference, diameter, and disc height height) were measured in a separate sample of 8 motion segments before (Vo) and after (Vi) digestion with with papain for one week. These measurements were used to make a estimate of disc volume. Disc volume was used to give an indication of the degree of swelling which might (would it not be "would occur"?) occur during incubation.
Radiography and Histology: I am a bit mixed up again. Which intact motion segments are these? Please be a bit clearer. "The disc volume injected was observed", only observed?? Is it not DMMB? At the end of this section "to a 96-well-plate method". I have never heard it described like that before.

Results: First para:second and third sentences need to be rewritten. Second para: second and fourth sentences need to be rewritten.

Biochemistry: Last sentence. I know what you mean, but only just! Please rewrite.

Discussion: Much of the Discussion is either gravy or "Introduction rides again". Cut at least one third out. Do you need the first para? First para page 9: 2 ml not 2mls. Last line: "potential nuclear replacement for subsequent testing" Elaborate a bit more or remove. Your last para (top of page 10) is your best para. "Injectable implants": I know quite a few, do you? Give some examples if you can. As I see it you would inject cells into a disc that had had a microdiscectomy, and the cells would help with healing and stabilization. Or in the case of a discectomy one would inject a silicone (or other type of goo) to either prevent further extrusion or to act as a filler to prevent too much disc height loss.

Your diagrams are quite good.

You need to work on the paper a lot more. I am willing to referee it again, but it needs a big effert on your part.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

There is a space between a number and the unit 6 cm not 6cm. The symbol for Volt is V not v. Use radiograph rather than X-ray.

Discretionary Revisions (which the author can choose to ignore)
I declare that I have no competing interests