Reviewer's report

Title: Anti-diabetic Indian Ayurvedic medicinal plants as potent inhibitors of pancreatic alpha-amylase activity

Version: 1 Date: 30 September 2010

Reviewer: Mauro Carai

Reviewer's report:

The main aim of this study was to assess the in vitro #α-amylase inhibiting activity of different extracts of 17 traditional anti-diabetic plants used in Ayurvedic medicine. For this purpose 126 extracts, prepared using 6 different solvents (cold water, hot water, methanol, isopropanol, acetone, methyl-butyl-tertiary ether and cyclohexane) were tested for their potential activity in inhibiting in vitro porcine pancreatic amylase.

Preliminary screening was conducted by means of a starch-iodine colour assay. The activity of the most promising extracts on porcine pancreatic amylase was quantified using the chromogenic DNSA method. Maximal inhibiting activity was achieved by 3 isopropanol extracts, made respectively from Linum usitatissimum seeds, Morus alba leaves, and Ocimum tenuiflorum leaves. The extracts of the 3 most promising plants were analyzed to identify possible active constituents underlying the observed effect on #α-amylase.

The study provides additional data to the biochemical basis of some Ayurvedic anti-diabetic plants, in the light of their control of postprandial rise of glycemia secondary to the effect on mammalian #α-amylase of some constituents of these plants. The paper contains some elements of interest, although several weaknesses need to be addressed.

Specifically:

• The entire name, in brackets, of each abbreviation should be provided.

• The rationale of the choice of porcine pancreatic amylase for use in testing extract activity should be indicated.

• In the Introduction and in the Results and Discussion paragraphs, a more appropriate literature on type 2 diabetes should be reported (to replace references no. 3, 5, 18, and 19), and a brief review of the pharmacological properties of #α-amylase inhibitors is needed.

• In different paragraphs, appropriate spaces must be introduced when referring to concentrations or quantities (0.02-M, 100-µl, etc.).

• Authors should clarify which kind of controls were included (page 8, line 16).

• Was the starch soluble in the buffer? Or it was suspended in the medium (page 8, line 23).
• When a concentration is indicated in the text, its weight and volume should also be provided (page 9, line 5).

• The Results and Discussion paragraph should be shortened omitting (page 11, from line 7 to line 13) information already provided in previous paragraphs; some of the details may be more appropriately placed in the Methods section (page 11, from line 18 to line 24).

• Several typing mistakes (...) should be removed from page 13, line 25.

• The References should be accurately checked (i.e. ref. 7 “potntials” a “e” has been omitted)

• The Results section should also be rewritten, particularly as very important statistical date are missing, such as, for example, the results of ANOVAs (only the results of post hoc tests are reported in the tables).

• In Table 1, the V. No should be omitted, these data may be reported in the Additional files section.

• Table 2 adds no further understanding of the activity of extracts, particularly as the reader is not able to evaluate which concentration range performed an effective inhibition. A reference compound should however be used in evaluating the true potential of these extracts.

• The Authors should revise the style of the manuscript; as an example, shorter sentences might help the reader to grasp the meaning better.