cellulose are unacceptable due to filming/picking and lamination/capping on compression combined with high friability. The formulation with povidone/croscarmellose sodium furnishes very hard granules with uneven particle size resulting in inferior mass uniformity and rather slow disintegration. Moreover, this formulation exhibits appreciable loss in potency on storage (Table 3). By contrast, the starch pregelatinized formulation furnishes tablets with excellent technical properties.

References

Gu L, Strickley RG (1987) Diketopiperazine formation, hydrolysis, and epimerization of the new dipeptide angiotensin-converting enzyme inhibitor RS-10085. Pharm Res 4: 392–397

Gu L, Strickley RG, Chi LH, Chowhan ZT (1990) Drug-excipient incompatibility studies of the dipeptide angiotensin-converting enzyme inhibitor moexipril hydrochloride – dry powder vs wet granulation. Pharm Res 7: 379–383

Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Jamia Hamdard (Hamdard University), Hamdard Nagar, New Delhi, India

Effect of *Aralia cachemirica* Decne root extracts on blood glucose level in normal and glucose loaded rats

Z. A. Bhat, S. H. Ansari, H. M. Mukhtar, T. Naved, J. I. Siddiqui, N. A. Khan

Received February 23, 2005, accepted March 31, 2005

S. H. Ansari, Department of Pharmacognosy & Phytochemistry, Faculty of Pharmacy, Jamia Hamdard (Hamdard University), Hamdard Nagar, New Delhi-110062, India
shansari189@rediffmail.com

Pharmazie 60: 712–713 (2005)

An aqueous and alcoholic extract of the roots of *Aralia cachemirica* (Araliaceae) were evaluated for hypoglycemic activity in normal fasted and glucose induced hyperglycemic rats. The aqueous and alcoholic extracts at a dose of 250 mg/kg showed statistically significant ($p < 0.01$) hypoglycemic activity in glucose loaded animals however no effect was observed in normal fasted rats.

Aralia cachemirica (Araliaceae), a lax shrubby herb, 1 to 3 m tall, is found distributed in temperate Himalayas from Kashmir to Sikkim at 2100 to 4000 m altitude (Asolkar et al. 1992). It is known that most of the members in Araliaceae family have high molecular weight polysaccharides (glycans) stored in their roots and many medicinal properties including hypoglycemic activity of these drugs are attributed to these glycans (Tomoda et al. 1985; Fang et al. 1985; Tomoda et al. 1984; Divakar and Bensita 2000). Many *Aralia* species and their isolated constituents show remarkable hypoglycemic activity (Yoshikawa et al. 1996; Martinez and Staba 1984; Yoshikawa et al. 1995). On these basis it was found worthwhile to investigate this plant for hypoglycemic activity. The following phytoconstituents have already been isolated from the plant: octadec-6-enoic acid, 8- primara-14,15-diene-19-oic acid, aralosides A&B (George et al. 1984) Nonane, a hexacosane derivative, petroselinic acid, stigmasterol and β-sitosterol. Anti-inflammatory activity of this plant has also been reported (Asolkar et al. 1992).

The hypoglycemic activity of *A. cachemirica* was evaluated in this study. Both the aqueous as well as the alcoholic extracts showed statistically significant effects ($p < 0.01$) in glucose induced hyperglycemic rats (table) against a control group. However no hypoglycemic activity was observed in normal fasted rats (data not shown).

The results indicate that the roots of *Aralia cachemirica* possess statistically significant hypoglycemic activity and also suggest that the hypoglycemic constituents are present both in aqueous as well as alcoholic extracts. Further studies are in progress to identify the components responsible for hypoglycemic activity.

Table: Effect of aqueous and alcoholic extract of *Aralia cachemirica* on glucose tolerance test[a]

Group	Treatment	Basal Value	30 min	90 min
I	Normal group (distilled water only)	69.33 ± 2.24	110.6 ± 1.20	89.6 ± 2.62
II	Standard group (gliclazide)	65.83 ± 1.47	84.20 ± 2.85***	54.40 ± 1.86***
III	Test group-1 (aqueous extract)	68.0 ± 2.56	95.80 ± 1.08**	78.20 ± 2.90*
IV	Test group-2 (alcoholic extract)	66.20 ± 1.14	91.24 ± 1.20**	69.64 ± 3.70**

[a] Values are means ± S.E.; n = 5
* $p < 0.05$, vs. group I, ** $p < 0.01$, *** $p < 0.001$

Experimental

1. Plant material

The roots of *Aralia cachemirica* Decne (Araliaceae) were collected from the Aharbal region of Kashmir (J&K), India, in the presence of Dr. A. R. Naqshi, Taxonomist, Department of Botany, Faculty of Science, University of Kashmir. A voucher specimen is deposited in the Laboratory of Pharmacognosy, Department of Pharmaceutical Sciences, University of Kashmir. Shade dried roots were extracted with water and alcohol separately, filtered and dried in a vacuum rotary evaporator.

2. Animals

Wistar rats (180–220 g) of either sex were used. They were obtained from Central Animal House, Jamia Hamdard, New Delhi and housed under standard environmental conditions at the animal house. The animals were fasted for 16 h prior to experiment, with access to water *ad libitum*.

3. Effect of A. cachemirica extract on normal fasted rats

Fasted rats were divided into four groups of five animals each. Group 1 served as normal control and received distilled water only. Group II served as standard control and received standard drug, gliclazide at an oral dose of 25 mg/kg. Group III the received the aqueous extract and group IV received the alcoholic extract at an oral dose of 250 mg/kg. Blood samples were collected from the tip of the tail just prior to drug/extract administration and at 1 and 3 h. Serum was separated and glucose levels were estimated by the glucose oxidase method.

4. Effect of A. cachemirica on glucose loaded animals

Fasted rats were divided into four groups of five animals each. Group 1 served as normal control and received distilled water only. Group II served as standard control and received standard drug, gliclazide at an oral dose of 25 mg/kg. Group III received the aqueous extract and group IV the alcoholic extract at an oral dose of 250 mg/kg. Thirty minutes after drug administration the rats of all the groups were orally treated with 2 g/kg of glucose. Blood samples were collected from the tip of the tail just prior to drug administration and 30 and 90 min after glucose loading. Serum was separated and blood glucose levels were measured immediately by the glucose oxidase method (Varley et al. 1967). Statistical significance was determined by using one-way analysis of variance (ANOVA) followed by Dunnet's t-test. $P < 0.01$ indicates significant differences between group means.

Acknowledgement: The authors whish to thank Panacea Biotech Ltd. for providing a complimentary sample of gliclazide.

References

Asolkar LV, Kakkar KK, Chakre OJ (1992) Glossary of Indian medicinal plants with active principles, Part-1, National Institute of science communication (CSIR): New Delhi, India. p. 82

Tomoda M, Shimada K, Konno C, Hikino H (1984) structure of panaxan B, a hypoglycemic glycan of *Panax ginseng* root. Phytochemistry. 24: 2431–2433.

Fang J, Prokch A, Wagner H (1985) Immunologically active polysaccharides of *Acanthopanx senticosus*. Phytochemistry 24: 2619–2433.

Tomoda M, Shimada K, Konno C, Sugiyama K, Hikino (1984) Partial structure of panaxan A, a hypoglycemic glycan of *Panax ginseng* root. Planta Med 50: 436–438.

Divakar MC, Bensita MB (2000) Screening of various leaf extracts of *Polyscias fruiticosa* Harms for their antidiabetic activity. Ind J Nat Prod 14 (2): 24–27.

Yoshikawa M, Murakami T, Harada E, Murakami N, Yamahara J, Matsuda H (1996) The hypoglycemic principles from the root cortex of *Aralia elata* Seem. Chem Pharm Bull 44: 1923–1927.

Martinez B, Staba EJ (1984) The physiological effects of *Aralia, Panax* and *Eleuthrococcus* on exercised rats Jpn J Pharmacol 35: 79–85.

Yoshikawa M, Yoshizumi S, Ueno T, Matsuda H, Murakami T, Yamahara J, Murakami N (1995) Hypoglycemic constituents from a garnish foodstuff "taranome" the young shoot of *Aralia elata* Seem, Chem. Pharm. Bull. 42: 1354–1356.

George V, Nigam SS, Rishi AK (1984) Isolation and characterization of aralosides and acids from *Aralia cachemirica*. Fitoterapia 55: 124–126.

Varley H, Gowenlok AH, Bel MC. (1976) Practical Biochemistry, Heinmann, London; pp. 389–391.