

Antifertility effect of aristolic acid from *Aristolochia indica* (Linn) in female albino rabbits

Anita Pakrashi and B. Chakrabarty¹

Reproductive Biology Research Section, Indian Institute of Experimental Medicine, Calcutta-700032 (India), 15 February 1978

Summary. Aristolic acid exerted significant antifertility effects in mature female rabbits without hampering the clinical chemical values in blood.

The antifertility effect and other biological properties of different extracts and fractions from the roots of *Aristolochia indica* on mice were previously communicated from this laboratory^{2,3}. Aristolic acid⁴, previously known as fraction II², was found to exert significant abortifacient effect in female rabbits. The compound did not cause any change or damage in the clinical chemical values of blood of the aborting females.

Materials and methods. Female rabbits of proved fertility were caged in their heat period with fertile males in the ratio of 1:1 and the day 1 of gestation was considered to be the day when spermatozoa were detected in the vaginal lavage. The mated females were laparotomized on day 9 and the number of implantation sites and corpora lutea were counted. Aristolic acid pasted with gum acacia powder and suspended in water was administered orally at the dose level of 60 and 90 mg/kg b. wt to 2 groups of 5 rabbits on day 9 of pregnancy. 5 control (vehicle-treated) pregnant females were kept with each group for comparison. Blood was drawn from each animal on days 9, 11, 13 and 15 for estimation of serum alkaline phosphatase, whole blood cholesterol content, serum glutamic oxalacetic transaminase (SGOT) and blood sugar content following the stan-

dard methods⁵⁻⁸. All values were determined from each animal after 16-18 h of fasting. The females were autopsied on day 16 after observing mammary gland depression, external vaginal bleeding and palpation. At autopsy the liver glycogen content and alkaline phosphatase activity and kidney alkaline phosphatase activity were estimated from these females using standard methods^{5,9}.

Results and discussions. Aristolic acid, when administered at the dose level of 60 mg/kg b. wt, could produce only 65% foetal loss though this dose produced 100% interception in mice³. The next higher dose (90 mg) caused 80% foetal loss in the treated females as compared to the controls. On laparotomy the uteri were found to be thick, muscular and contractile in nature. Degenerated foetal products in a black mass were sometimes present in the uterus. In the aborting females, ovaries showed the presence of degenerated corpora lutea. There was apparent elevation of SGOT and kidney alkaline phosphatase activity both at the dose level of 60 and 90 mg (table 2). However, the elevation was found to be statistically insignificant. The values for blood sugar, cholesterol, liver glycogen and alkaline phosphatase activity were in the normal range as compared to those of normal pregnant values (table 2).

Table 1. Abortifacient effect of aristolic acid on female rabbits (values are mean \pm SE)

Treatment*	Dose (mg/kg b. wt)	Corpora lutea on day 9	Implantations on day 9	Implantations on day 16	Loss of implantations	Viable foeti	Foetal loss (%)
Vehicle	-	7.2 \pm 1.5	7.2 \pm 1.5	6.8 \pm 1.09	0.4	6.8 \pm 1.09	0.4
Aristolic acid	60	5.0 \pm 2.0	6.0 \pm 2.0	1.75 \pm 1.03	3.25 \pm 1.05	1.75 \pm 1.03	65
	90	6.0 \pm 1.6	6.0 \pm 1.6	1.2 \pm 1.08	4.8 \pm 1.06	1.2 \pm 1.08	80

* No. of animals used in each treatment was 5.

Table 2. Clinical chemical values of the rabbits treated with aristolic acid during antifertility testing (values are mean \pm SE)

Treatment*	Dose (mg/kg b. wt)	Blood sugar (mg/100 ml)	Serum alkaline phosphatase (mg phosphorus/100 ml/h)	Whole blood cholesterol content (mg/100 ml)	Liver glycogen content (g glucose/100 g)	Liver alkaline phosphatase (mg phosphorus/100 mg/h)	Kidney alkaline phosphatase (mg phosphorus/100 mg/h)	SGOT (units/ml)
Vehicle	-	90.27 \pm 2.96	9.37 \pm 1.5	163.74 \pm 15.9	0.18 \pm 0.05	0.12 \pm 0.3	1.49 \pm 0.05	97 \pm 5
Aristolic acid	60	86.27 \pm 4.0	9.2 \pm 1.6	179.56 \pm 1.82	0.19 \pm 0.05	0.13 \pm 0.03	1.82 \pm 0.03	99 \pm 5.5
	90	92.95 \pm 2.45	9.8 \pm 2.7	164.7 \pm 15.1	0.21 \pm 0.02	0.14 \pm 0.4	1.94 \pm 0.06	106 \pm 5.2

* No. of animals used in each treatment was 5.

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