

## Undetermined Teratogenic Risks by Traditional Sex Selection Drugs Singh S<sup>1</sup>, Kumar R<sup>2</sup>, Kaur H<sup>3</sup>

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### ABSTRACT

Male child preference is a well known phenomenon in Indian society. There are various drugs and techniques used to achieve this target, even though these are illegal and punishable. Women desirous of male child try to procure these drugs which are supposed to help in sex selection. These secretly procured drugs can cause congenital defects in the fetus due to the fact that these drugs are always administered during first trimester - the most vulnerable period for the fetus. There are many drugs, whose teratogenic potential is already known. But in the absence of enough data and lack of clinical trial studies in pregnant women, we don't really know about many drugs, which are necessary for various medical conditions during pregnancy. On top of that these so called sex selection drugs add to an unhealthy practice leading to many more probable congenital anomalies. It is the need of the hour that proper data is collected about all such drugs and their implications is studied on fetus. Due to secret prescriptions, it may be difficult to ban such drugs, but public awareness and health education about congenital anomalies caused by such drugs is probably the only way to fight this menace.

Pregnancy has always been a special event in our lives. The selection of gender is as ancient as the origin of the patriarchal system in India and has been a quest of couples. Early drawings from prehistoric times suggest that sex selection efforts were being investigated by our earliest ancestors. The art of sex selection and healthy conception was mentioned in the ancient texts written by Charaka (2nd century BC), Sushruta (5th century BC) and in the 12th century AD texts of Bhawa Prakasha. Later history shows intense interest in sex selection by early Asian (Chinese), Egyptian and Greek cultures.

The strong desire to have a son in India is a well documented phenomenon and is cause for skewed sex ratio and female foeticide. [1, 2] Indian northern states are the worst in preference for male child and their sex ratio is most skewed in the world. [3]

Even though sex selection is illegal in India, studies on traditional practices on sex selection in North India have documented the use of Sex Selection Drugs (SSD) in this region for having a male child. The use of ayurvedic sex selection drugs is also causing an increase in occurrence of congenital malformation. [1, 4]

Constituents of many Ayurvedic Sex Selection Drugs are readily available in many grocers shops, including Shivalingi (Bryonia Laciniosa), Majuphal (Quercus infectoria). These are included in the formulations of various ayurvedic medications used for the treatment of other medical conditions as well. A preliminary study has shown that some of the preparations contain hormones (testosterone) and natural steroids. The scientific validity of such measures is however unknown.

Sex selection drugs are consumed between 6-8 weeks of pregnancy – the most critical period of fetal development during which fetal sexual differentiation occurs under influence of both genetic and hormonal factors. Any exposure of the fetus to steroids and particularly hormones can have deleterious impact on sexual differentiation and probably on the behavior of the individual. The amount of different constituents that the fetus is exposed to is still unknown. Exposure of a female fetus to testosterone during this phase can lead to masculinization of genitalia. In fact, androgenic stimulation at any time during fetal life can cause clitoral hypertrophy.<sup>[5, 6]</sup> In a community based survey study, almost all the women with no previous male child, opted for SSD while 57% did so in the hospital based survey.<sup>[4]</sup>

Recently, in North India, there have been reports of criminal charges against Ayurvedic doctors and unqualified medical practitioners advertising pre and post-conceptional sex selection techniques/ drugs.<sup>[7]</sup> In 1991, the Government of Gujarat State, India, banned the manufacture and sale of an Ayurvedic drug called “Select” which was claimed to produce male fetus, if

consumed by pregnant woman for 45 days after her last menstrual period. The drug's high cost did not deter the naive and gullible public from using it.<sup>[8]</sup>

It will be difficult to selectively ban any individual herb even under the amended PNDT Act. They will continue to be sold by the grocers. It is my serious concern that such drugs can cause many birth defects and we have no concrete evidence that which all drugs are to be blamed. A probable impact of drugs can be known from animal studies during pregnancy but animal studies are not always predictive for a teratogenic effect in humans. Pregnant women are not often included in clinical trials and that is why drug used by pregnant women can be considered experimental in most instances. On other instances the use of medication is inevitable in the treatment of women of reproductive age and during pregnancy. We already know about clear evidence of teratogenicity exhibited by certain drugs e.g. thalidomide and isotretinoin, can produce birth defects. The teratogenic risks in human pregnancy are undetermined for more than 90% of drug treatments approved in the USA in the last decades. A case-control study taking congenital malformation as the cases in selected areas to determine the use of any sex selection technique can be done. There is a need to study sex selection drugs in greater details on the basis of types of drugs in different regions, biochemical analysis of each constituent present, etc. to have clearer picture.

Most of the times these drugs are procured and prescribed with complete secrecy and the data is not available to establish a clear link between these drugs and congenital malformations. Because of

this secrecy it is also difficult to take any legal action against the people involved in this business. That leaves us with very few alternatives to restrict this practice and the only way which can help the most is by creating awareness among people that any form of drug consumed during first trimester can be potentially harmful.

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